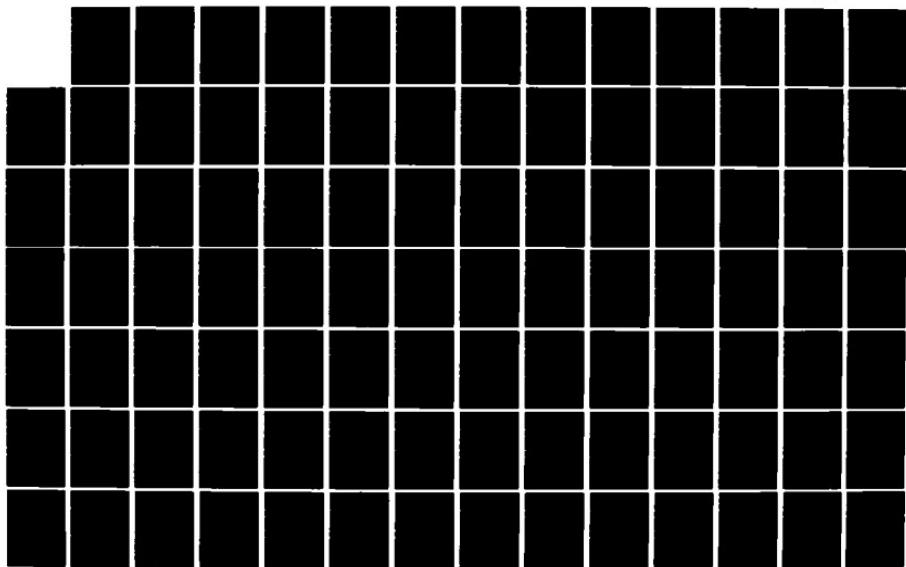


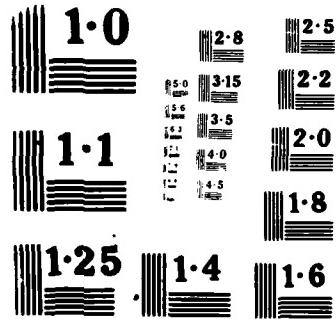
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TECHNICAL SKILL TRAINING
IN THE RESERVE COMPONENTS
OF THE AIR FORCE

Working Note RA401-2

April 1985

Edward D. Simms, Jr.
Dayton S. Pickett



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1. INTRODUCTION

This working note describes the current Air Force approach to building and sustaining technical logistics skills in both the Air National Guard and the Air Force Reserve.¹

In the past decade, the Air Force has grown more dependent on the logistics specialists of the Air Guard and Air Force Reserve. Airmen assigned to the Air Reserve Forces now comprise a significant portion of the personnel in many Air Force specialties, and constitute a majority in a few instances. The purpose of this work is to assess the suitability and adequacy of the policies and programs which support technical skill training for the Reserve Component.

We address only the programs dealing with the development and sustainment of certain important technical logistics skills of enlisted personnel, rather than the training programs for general management/supervisory skills or collective unit proficiency. We have concentrated on seven Air Force logistics specialties in the Selected Reserve of the Air Force, and have excluded consideration of the Individual Ready Reserve.

For a full understanding of the requirements for individual training programs, we first analyze the role and responsibilities of enlisted logistics specialists of the Air Force's Selected Reserve, considering wartime assignments as well as documented peacetime duties. Second, we review the

¹In this report, several terms are used interchangeably to refer to the Air National Guard and the Air Force Reserve. The Air National Guard may be called the Air Guard or ANG. The acronym is used in tables and figures. Similarly, the Air Force Reserve is referred to as AFRES in tables and figures. Together, these two elements comprise the Air Reserve Forces, or ARF, the Guard/Reserve, or the Reserve Component.

statistical characteristics (personal attributes and experience factors) of the population of guardsmen and reservists who now occupy these positions to understand whom the Air Force is training. Third, we analyze the overall training strategy² and the specific training programs that prepare logistics specialists of the Reserve Component for their wartime tasks. These analyses are presented in the following sections, and specific details for each Air Force Specialty Code (AFSC) in our sample are presented separately in Appendices A through G. Appendix H describes the Air Force's Field Training Detachments (FTDs), and Appendix I describes a data problem that we are still analyzing.

²A training strategy in this context is the overall approach that governs the training of interest, including training plans, policies, and procedures.

2. THE JOB

BACKGROUND

Skill Level, Grade, and Title

Throughout this report, and in related working notes dealing with other Military Services, the terms "apprentice, journeyman, master, and supervisor/manager" indicate a logical progression in skill level within each military job or specialty. The Air Force designates the same progression by means of different enlisted grades, a series of numerically designated skill levels, and a variety of titles. Table 2-1 relates some terms of the Air Force system to those of the Logistics Management Institute (LMI).

TABLE 2-1. SKILL LEVEL, GRADE, AND TITLE

LMI TERM	AIR FORCE SKILL LEVEL	GRADE	REPRESENTATIVE TITLES
Unskilled	1	E1 or E2 (not considered further in this report)	Helper
Apprentice	3	E3 Airman First Class	Mechanic, or Specialist, or Machinist
J Journeyman	5	E4 Senior Airman E4 Sergeant E5 Staff Sergeant	Mechanic, or Specialist, or Machinist
Master	7	E6 Technical Sergeant E7 Master Sergeant	Technician, or Supervisor
Supervisor/Manager	9 & 0	E8 and above (not considered further in this report)	Superintendent, or Manager

This study concentrates on the middle (3, 5, and 7 skill levels) of the Air Force's spectrum of expertise, where the greatest population lies. We do not consider the 1, 9, and 0 skill levels.

Skill Range

Each of the terms (apprentice, journeyman, master) denotes a general level of proficiency and a range of skills or tasks within the military job. In general, higher-skilled jobs require higher proficiency levels (including the ability to teach others) over a broader range of tasks than do lower-skilled jobs in the same AFSC.

Apprentices are airmen who have successfully completed both Basic Military Training (BMT) and a basic technical training course, and who thereby have attained basic knowledge within their AFSC; but they lack the experience and proficiency to perform most tasks without supervision. In Air Force manning documents, apprentice positions or billets never appear without at least one accompanying journeyman billet.

Journeymen have shown proficiency in their military jobs. They can reasonably be expected to perform without direct supervision. They are also expected to teach apprentices during on-the-job training (OJT).

Masters have a high degree of technical knowledge and ability, and have acquired supervisory capacity through training and experience. In the Air Force, the merging or combining of career ladders for purposes of supervision occurs routinely at the supervisor/manager level (see Table 2-1).

DESCRIPTION OF AIR FORCE SPECIALTY CODES

To assess the Air Force's training approach to enlisted logistics skills, we analyze seven AFSCs in detail. These AFSCs are chosen because (1) a moderate-to-high level of skill is required, (2) a moderate-to-high level of wartime criticality is associated with the specialty, or (3) one or more

features of the training requirement or environment make training especially difficult. The AFSCs examined are shown in Table 2-2.

TABLE 2-2. AIR FORCE SPECIALTIES SELECTED FOR STUDY

AFSC	TITLE	SIMPLIFIED JOB DESCRIPTION
304X4	Ground Radio Communications Specialist/Technician	Installs, maintains, and repairs ground radios and associated equipment.
321X2	Weapon Control Systems Mechanic/Technician	Maintains and repairs weapon control systems (target acquisition radar, computer support, munitions release) mounted in aircraft.
326X0	Avionics Aerospace Ground Equipment Specialist/Technician	Maintains and repairs ground support equipment for electronic and electrical systems aboard aircraft.
328X4	Avionic Inertial and Radar Navigation Systems Specialist/Technician	Maintains and repairs inertial and Doppler navigation systems aboard aircraft and related ground support equipment.
426X2	Jet Engine Mechanic/Technician	Installs, maintains, and repairs jet engines.
427X0	Machinist/Machine Shop Technician	Makes, reworks, assembles, and fits machined parts, using hand and machine tools.
645X0	Inventory Management Specialist/Supervisor	Performs most tasks, except warehousing, related to functioning of the Standard Base Supply System, including accounting, stock control, and equipment management.

AFSC DISTRIBUTION BETWEEN THE ACTIVE AND RESERVE COMPONENTS

The distribution of these specialties between the Active and Reserve Components gives insight into the importance of Reserve Component logistics specialists to the Total Force. Just over one-quarter (27 percent) of the positions or billets designated for these seven AFSCs in the total Air Force's

force structure in Fiscal Year (FY) 1984 are authorized in the Reserve Component. Dependence on the Reserve Component for these specialties ranges from 22 to 52 percent of Air-Force-wide authorizations. Table 2-3 contains specific information on this distribution.

TABLE 2-3. AIR FORCE SKILLS: RESERVE COMPONENT DEPENDENCE

AFSC	AUTHORIZED PERSONNEL			ARF PORTION OF TOTAL (PERCENT)
	Active	ANG	AFRES	
304X4	4,666	1,727	89	28
321X2	1,386	1,007	270	48
326X0	200	189	29	52
328X4	1,468	541	274	36
426X2	8,113	1,644	1,603	29
427X0	779	209	140	31
645X0	15,928	3,750	826	22
Totals	32,540	9,067	3,231	27

AIR FORCE SPECIALTY CODE PROGRESSION

Apprentice (3 Skill Level)

Air Force apprentices (grade E3) in technical logistics specialties perform their duties under the supervision of journeymen. Across the specialties selected for study, the key indicator of apprentice-level performance is lack of independence. The tasks required of the apprentice are generally those required of the journeyman, except that the apprentice works under supervision. The Air Force formally refers to the apprentice airman as "semi-skilled," and this absence of independence underscores the meaning of that reference.

Journeyman (5 Skill Level)

Air Force journeymen may hold E4 (Senior Airman or Sergeant) or E5 (Staff Sergeant) enlisted grades. The journeyman's specialty qualifications are the same as those of the apprentice, and the tasks to be accomplished by this airman are the same as those required of the apprentice, except that the journeyman must (1) be capable of independent performance of the task, (2) pass a more rigorous review and examination as part of the formal OJT program in the specialty, and (3) supervise apprentice workers in their performance of the same tasks. Supervision consists of assigning work to apprentices, reviewing their completed tasks against performance standards, and instructing them in improved work methods.

Master (7 Skill Level)

The master may hold E6 (Technical Sergeant) or E7 (Master Sergeant) enlisted grades. At this level, a technical advisory role appears for the first time. The master thereby becomes a technical adviser to supported units and officials. Technical supervision of groups of subordinates is part of the normal work of the master, as is the planning and scheduling of complex jobs or groups of jobs. Refined testing and calibration activities (in maintenance specialties) are expected of the master. A tougher OJT performance review and a passing score in a more difficult OJT examination are requirements for award of the 7 (or master) skill level.

SUMMARY

The seven specialties chosen for study represent tough, complex, and important jobs in the operation of a wide range of Air Force units. Reserve Component positions generally represent a substantial fraction of positions in the Air Force's total force structure. It would be impossible for this Military Service to execute most major war plans effectively without well trained incumbents in these positions in the Air Reserve Forces.

3. THE INCUMBENT POPULATION

GENERAL

This chapter describes the Reserve Component population assigned to the seven sample Air Force specialties and compares them with their Active Component counterparts. We use two general sets of characteristics, personal attributes and experience factors, which affect trainability and job performance directly.

PERSONAL ATTRIBUTES

Logistics specialists of the Reserve Component are similar to their Active Component counterparts. Despite some variations between the two components in the three attributes reviewed (age, aptitude area scores, and civilian education), the populations are similar. Tables 3-1 through 3-3 show grouped personal attribute information across the entire Air Force population of the seven skills studied.

Age

Logistics specialists in the Air Reserve Forces are older than their counterparts in the Active Air Force, across all enlisted grades. The differences range from 1.3 years for apprentices to 6.1 years for masters. Table 3-1 contains information on average age of incumbents.

Aptitude Area Scores¹

There are no consistent differences between components in aptitude for the seven AFSCs. The scores on the pertinent subtest composites of the

¹ Aptitude area scores are derived from a combination of subtest scores in the Armed Services Vocational Aptitude Battery (ASVAB), which is administered at the time of entry into the Air Force. They are used to determine an individual's potential for success in training in an Air Force specialty.

TABLE 3-1. INCUMBENT PERSONAL ATTRIBUTES -- AGE

GRADE	COMPONENT	MEAN AGE (YEARS)
Apprentice (E1-E3)	Active	21.8
	ANG	23.5
	AFRES	23.1
J Journeyman (E4)	Active	24.6
	ANG	27.7
	AFRES	27.4
J Journeyman (E5)	Active	29.0
	ANG	32.9
	AFRES	31.5
Master (E6)	Active	34.4
	ANG	38.6
	AFRES	37.3
Master (E7)	Active	38.1
	ANG	44.2
	AFRES	42.6

ASVAB for each AFSC show that all incumbents -- Active, Guard, and Reserve -- have about the same potential for success. These raw test scores, shown in Table 3-2, should be compared grade by grade. The evolution of ASVAB test forms with the passage of time, together with the use of different qualifying scores at different times, can lead to misleading conclusions if different cohorts are compared.

Civilian Education

Over 98 percent of Air Force personnel in both components have completed high school. The Air Guard and Air Force Reserve do have a slightly higher percentage of enlistees who have not graduated from high school, but they also retain a slightly higher percentage of airmen who go on to college. Table 3-3 displays these data.

TABLE 3-2. INCUMBENT PERSONAL ATTRIBUTES -- APTITUDE AREA SCORES
 (Mean Scores)

GRADE	COMPONENT	SPECIALTIES						
		304X4 ^a	321X2 ^b	326X0 ^c	328X4 ^d	426X2 ^e	427X0 ^f	645X0 ^g
E1-E3	Active	75.5	73.5	71.9	75.7	56.0	66.6	68.8
	ANG	74.5	76.0	77.2	77.5	58.8	51.8	66.4
	AFRES	IDA ^h	76.4	IDA	76.1	52.6	IDA	62.3
E4	Active	61.0	62.7	59.6	63.2	43.3	45.0	75.0
	ANG	65.8	63.8	60.7	65.1	48.8	48.3	71.3
	AFRES	68.2	76.1	IDA	75.0	53.3	49.7	72.3
E5	Active	60.8	61.9	60.7	61.0	45.9	50.3	77.1
	ANG	65.8	62.2	56.6	57.9	53.1	66.5	70.9
	AFRES	64.8	64.8	IDA	59.8	50.2	63.3	71.6
E6	Active	67.4	64.3	IDA	69.6	60.7	53.3	77.5
	ANG	69.4	65.8	78.5	56.6	60.1	DUR ⁱ	73.7
	AFRES	64.2	71.1	IDA	62.5	51.1	54.1	70.4
E7	Active	52.0	IDA	IDA	IDA	DUR	IDA	DUR
	ANG	57.7	64.0	IDA	IDA	77.5	IDA	73.8
	AFRES	71.0	IDA	IDA	53.0	58.6	IDA	75.1

^aMinimum acceptable score in this subtest (Electronic Aptitude) is now 65.

^bMinimum acceptable score in this subtest (Electronic Aptitude) is now 65.

^cMinimum acceptable score in this subtest (Electronic Aptitude) is now 75.

^dMinimum acceptable score in this subtest (Electronic Aptitude) is now 65.

^eMinimum acceptable score in this subtest (Mechanical Aptitude) is now 30.

^fMinimum acceptable score in this subtest (Mechanical Aptitude) is now 35.

^gMinimum acceptable score in this subtest (Administrative Aptitude) is now 50. A score of at least 45 in General Aptitude may be used as a substitute.

^hInsufficient data available.

ⁱData under review.

TABLE 3-3. INCUMBENT PERSONAL ATTRIBUTES --
CIVILIAN EDUCATION COMPLETED

(Percentage of Total)

COMPONENT	NON-GRADUATE ¹	GED ²	HSDG ³	SOME COLLEGE ⁴
Active	0.6	<0.1	89.6	9.8
ANG	1.9	5.8	79.5	12.8
AFRES	1.9	6.3	80.3	11.5

¹Incumbents who have not graduated from high school.

²Incumbents who have completed high school through General Education Development (GED) equivalency.

³Incumbents who are high-school-diploma graduates (HSDG) but have no college work.

⁴Incumbents who have completed some college or university work.

EXPERIENCE

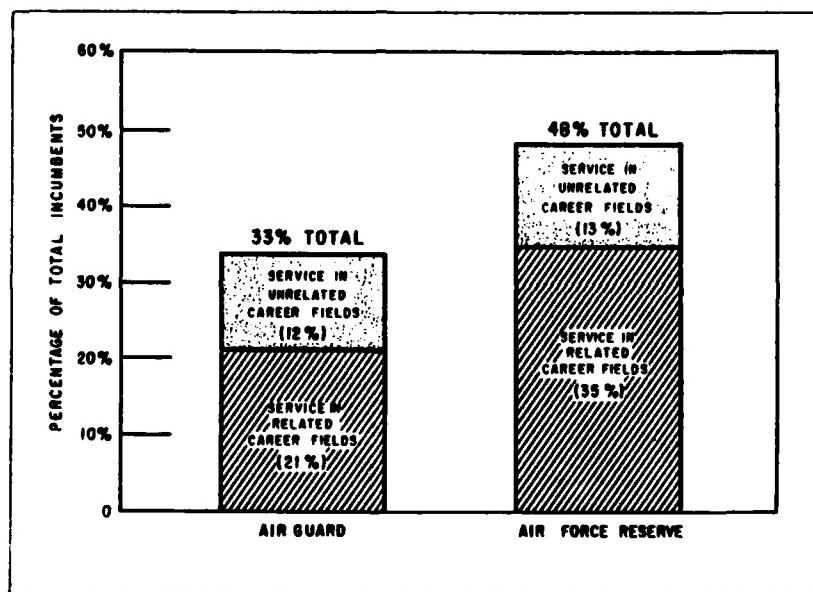
Five experience factors for Reserve Component populations are reviewed: prior active military service, length of total service, time in grade, related civilian occupation, and level of full-time support. Within each specialty, if a significant portion of the incumbents bring related experience to their military jobs, training in the unit is easier. Technical skills are easier to sustain with moderate training than if the group has no experience related to their military job and have few full-time support staff members from whom to seek technical help.

Prior Military Service²

Almost one-half (48 percent) of all Air Force Reservists assigned to the AFSCs in this study have had prior military service of some kind in the Active Component. Over one-third (35 percent) of the Reservists assigned to these specialties have had active military service in related career fields.³ The percentage of Air Guardsmen in these two categories is somewhat lower. Figure 3-1 displays prior military service data graphically.

FIGURE 3-1. INCUMBENT EXPERIENCE -- PRIOR ACTIVE MILITARY SERVICE

(Seven Technical Logistics Skills)



²The prior service data presented in this section have been developed by the Defense Manpower Data Center using the Reserve Component Common Personnel Data System and a cumulative loss file containing all military service separation data since 1971. As publication of this report began, the National Guard Bureau's Air National Guard Support Center and Headquarters, Air Force Reserve were able to compute prior service information on Guardsmen and Reservists based on their own separate data files. That information shows higher levels of prior active service experience among both Air Guardsmen and Air Force Reservists than are discussed in this section. See Appendix I for more information.

³Service in "related career fields" means: (1) service in the Air Force in the same AFSC; (2) service in the Air Force, not in the same AFSC but in the same Department of Defense (DoD) occupational code; and (3) service in different Military Service but in the same DoD occupational code. These types of service are displayed separately in the appendices.

Length of Service/Time in Grade

Except for the lowest enlisted grades, members of the Air Guard in the specialties we studied have served longer, and have spent a longer time in their current grade, than either their Air Force Reserve or Active Air Force counterparts. It is difficult, however, to assess the implications of these differences in experience because of the lack of accepted conversion criteria involving duty days and training days across components. Table 3-4 contains information on total length of military service and time in grade.

TABLE 3-4. INCUMBENT EXPERIENCE -- LENGTH OF SERVICE/TIME IN GRADE

(Years)

LEVEL OF SKILL	COMPONENT	AVERAGE LENGTH OF SERVICE ¹	AVERAGE TIME IN GRADE
Apprentice (E1-E3)	Active	2.4	0.9
	ANG	1.6	0.8
	AFRES	1.2	0.7
J Journeyman (E4)	Active	4.8	1.5
	ANG	5.3	1.8
	AFRES	4.4	1.2
J Journeyman (E5)	Active	9.3	2.9
	ANG	9.7	3.3
	AFRES	8.2	2.0
Master (E6)	Active	14.8	2.4
	ANG	15.7	4.8
	AFRES	14.0	3.9
Master (E7)	Active	18.7	1.9
	ANG	23.2	5.4
	AFRES	19.8	3.3

¹Includes all prior military service, if any.

Civilian Occupation

Sizeable portions of Air Guard and Air Force Reserve populations assigned to the seven selected AFSCs hold civilian jobs directly related to

their military jobs. Even with allowance for the problems associated with all self-reported occupational information, there is little doubt that this carry-over benefit enhances ability to sustain skills. Table 3-5 contains this information.

TABLE 3-5. RELATED CIVILIAN OCCUPATIONS OF GUARD AND RESERVE PERSONNEL
(Seven Selected Specialties)

SKILL	PERCENTAGE OF INCUMBENTS WITH RELATED CIVILIAN OCCUPATIONS	
	ANG	AFRES
304X4	21.8	35.4
321X2	43.6	33.7
326X0	35.2	63.0
328X4	32.6	26.7
426X2	50.9	34.2
427X0	60.2	42.6
645X0	33.3	18.8
Totals	36.4	29.8

Full-Time Support

Over 30 percent of the Air Guard and Air Force Reserve positions representing the AFSCs of this study are occupied by full-time civilian technicians or Active Guard/Reserve military personnel on long tours of active duty.⁴ Virtually this entire full-time support staff will mobilize and deploy with their assigned units in the event of war. In the Air Force Reserve, the compatibility between the civilian technician's full-time support job and

⁴All Air Force Reserve full-time support is provided by civilian technicians. The Air Force Reserve does not use Active Guard/Reserve personnel; the Air Guard does.

weekend military position is very high. Though that compatibility is not so close for Air Guard technicians, Air Guard policy is to assign technicians to military jobs within the same career field. Table 3-6 shows information on full-time support.

TABLE 3-6. FULL-TIME SUPPORT FOR GUARD AND RESERVE
 (Seven Selected Specialties)

GRADE	TOTAL G/R ¹ AUTHORIZED	FULL-TIME SUPPORT ²	
		Assigned	Percentage of Authorized Strength
304X4	1,816	189	10.4
321X2	1,277	510	39.9
326X0	218	61	28.0
328X4	815	285	35.0
426X2	3,247	1,054	32.5
427X0	349	118	33.8
645X0	4,576	1,561	34.1
Totals	12,298	3,778	30.7

¹Guard/Reserve billets.

²Does not include Active Component advisers or civilian clerical employees of the Department of the Air Force.

Position Turbulence

During our early work on this project, we tried to determine the length of time each incumbent had served in the specific position now held. We believed that average time in job across a large population is a reasonable measure of personnel turbulence, a factor which does affect ability to sustain individual skills. We intended to compare the Active and Guard/Reserve populations using this measure. But difficulties were encountered in matching

individual personnel files with personnel transaction files; we are therefore unable to make the desired comparisons at this time.

Experience Overlap

Overlap, or double counting, occurs to some extent in three of the experience factors considered -- prior active military service, civilian occupation, and full-time support. For this reason the numbers and percentages in these individual groups are not additive. For example, a civilian technician machinist assigned to a Reserve Component unit as a 427X0 would report his/her civilian occupation as "machinist" or "Air Force Technician," both of which would be classified as civilian occupations related to the 427X0 position. On the other hand, it is unlikely that all prior-service, related-civilian-occupation persons are also full-time support staff members.

To test the extent of overlap between two of these three groups, we gathered information on the portion of full-time support staff with prior active military service. A total of 43.5 percent of members of the Air Force Reserve Component holding full-time support staff positions report having had extended active military service of some kind. Having considered all aspects of incumbent experience, we believe that between one-third and one-half of the Guard/Reserve incumbent population brings an appreciable and beneficial level of job-related experience to these duty positions in the Air Reserve Forces.

SUMMARY

Comparison of the personal attributes of Active and Reserve Component incumbents in the selected specialties leads to an overall conclusion of similarity in the populations. Despite variations among groups considered in this comparison, these variations are neither consistent nor striking. Air Force Reservists and Air Guardsmen resemble their Active Air Force counterparts to a great extent.

When experience factors are considered, on the other hand, a somewhat different picture emerges. While no single factor -- prior active military service, length of total service, time in grade, related civilian occupation, or level of full-time support -- shows this Guard/Reserve population to be exceptionally experienced, when they are considered together, these factors suggest a substantial core of highly experienced and qualified enlisted people assigned to logistics specialties in Air Guard and Air Force Reserve units. This important condition is further enhanced when considered in connection with two additional factors -- peacetime workload and Field Training Detachments (FTDs) -- which are discussed elsewhere in this report.

4. LOGISTICS SKILL TRAINING SYSTEM

TRAINING STRATEGY

General

For the seven AFSCs studied, the standard training program is essentially the program used to train Active Component airmen. Training developers concentrate upon the Active Air Force airmen as the target audience when designing training standards to develop and sustain technical logistics skills. Use of these training standards is modified slightly to meet the unique needs of Reserve Component airmen.

The Active Component training model in these technical fields calls for lengthy technical training (from 6 to 31 weeks) after a standard Basic Military Training (BMT) course of 6 weeks. Reserve Component enlistees without prior related military service are required to complete the same technical training as part of their "Initial Active Duty for Training" before returning to their units of assignment in these specialties. After the completion of technical training, there is no requirement for the logistics specialist ever again to return for additional institutional technical training. While a number of mid-career training courses are offered by both the Technical Training Centers (TTCs) and FTDs of the Air Force, these courses are not AFSC-producing courses. They are typically oriented on a single weapon or support system, or on a specific and limited mission. Table 4-1 shows the Air Force's overall training strategy associated with the seven specialties included in this study.

Mid-Career Courses

The Air Force TTCs of the Air Training Command (ATC) offer formal training courses for both journeymen and masters. These courses normally are

TABLE 4-1. TECHNICAL SKILL TRAINING STRATEGY

SKILL	BASIC MILITARY TRAINING (COMMON)	TECHNICAL TRAINING (APPRENTICE)	CAREER MATURATION (JOURNEYMAN AND MASTER SKILL DEVELOPMENT)
304X4	6 weeks	25 weeks	OJT/OJE through E7 (36 special courses available)
321X2 ^a	6 weeks	14 - 24 weeks	OJT/OJE through E7 (2 special courses available)
326X0 ^b	6 weeks	19 - 21 weeks	OJT/OJE through E7 (4 special courses available)
328X4	6 weeks	31 weeks	OJT/OJE through E7 (2 special courses available)
426X2	6 weeks	8 weeks	OJT/OJE through E7 (10 special courses available)
427X0	6 weeks	16 weeks	OJT/OJE through E7 (No special course available)
645X0	6 weeks	6 weeks	OJT/OJE through E7 (7 special courses available)

^a321X2 has five subspecialties ("Shredouts"). See Appendix B.

^b326X0 has three subspecialties ("Shredouts"). See Appendix C.

NOTE: OJE = on-the-job experience.

not mandatory. Instruction (in missions, tasks, or equipment) is provided in residence at one of the centers or through the use of mobile training teams. Additional mid-career instruction (primarily in maintenance skills) is provided by FTDs (see Appendix H for more information). These TTC courses are provided primarily for Active Component airmen, but a small number of Guard/Reserve airmen do attend. For the seven specialties studied, 35 of the 61 ATC mid-career residence courses given at TTCs in FY83 were offered to journeymen specialists and 26 to masters. A total of 1,729 Active Air Force airmen, 69 Air Guardsmen, and 3 Air Force Reservists took part.

The Specialty Training Standard

The entire training program for each Air Force specialty is based upon the Specialty Training Standard (STS) for that military job. An STS is a combination job description and career development roadmap. It lists the tasks to be performed and the standards of task performance for each skill level for that specialty. It identifies which tasks are to be taught (to specified levels of knowledge and task performance) during institutional training and which are to be taught during OJT. The STS, when properly annotated and filed with the records of the individual airman, becomes a step-by-step job proficiency guide with technical references, supervisor checklists, and other important training addenda.

The STS is constructed by the training developers for a specific specialty at the appropriate TTC. The STS is revised every 2 to 5 years. Each revision is based on comments from Major Commands and on the latest Occupational Survey Report (OSR) for that specialty provided by the Air Force's Occupational Measurement Center (OMC). After receiving the OSR results, the TTC responsible for the specialty holds a major training conference to discuss proposed changes in the STS. The main outcome of these Utilization and Training Workshops (UTWs) is a revised and updated STS for that specialty. Only after consensus has been achieved on STS revision at the UTW can work begin on rebuilding or upgrading the specialty's whole training program. The STS forms the foundation for design and development of all programs to support training in logistics skills.

The Occupational Survey Report

OSRs play an important role in defining and describing each Air Force specialty by providing a basis for STS tasks and knowledge. These reports are products of the systematic sampling of large populations of

airmen, using job inventories designed for each Air Force specialty. Approximately 50 OSRs are produced annually by OMC. OMC does not include Air Guard or Air Force Reserve incumbents in those surveys. It is impossible to tell whether OSR results would change as a result of Guard/ Reserve participation.

Apprentice Training

The objective of apprentice training (basic technical training or 3 skill level training) in the Air Force is to teach skills and knowledge appropriate for semiskilled performance in the unit. All the technical tasks listed in the appropriate STS are included in this training, although most of the task performance training is limited to teaching the apprentice to perform most of each task and to get help to perform the rest. The apprentice's task knowledge is characteristically limited to nomenclature and step-by-step procedures, while subject knowledge encompasses basic facts and principles applicable to groups of tasks.

J Journeyman Training

Journeyman skills and knowledge are achieved by means of formal OJT accompanied by continuing on-the-job experience (OJE).¹ Supervisory tasks appear in the STS for the first time at this level. Proficiency expected of the journeyman normally includes completion of all parts of each job task, with a degree of speed and accuracy which meets local demands. Journeymen understand operating principles embodied in individual tasks and groups of tasks. The Air Force's formal OJT program requires review and counseling by

¹OJE refers to a continuing workload characteristic of a section, department, shop, or similar operation, and requiring some output from every specialist assigned to that operation. In the course of conducting training flights, for example, an Air Force flying unit generates OJE for its maintenance personnel, who are required to repair or replace malfunctioning parts or subsystems on an ongoing basis. OJE, though it is not mentioned in the Air Force's training literature, plays an important role in skill maintenance and improvement.

the journeyman-trainee's supervisor by the 12th month of OJT,² again by the specialist's commander by the 18th month of OJT, and finally by the commander again by the 24th month of OJT. If the airman undergoing this upgrade OJT fails to perform journeyman-level tasks satisfactorily and fails to demonstrate journeyman-level knowledge by the 24th month review, the airman faces grade stagnation and the possibility of administrative separation from the Service. In addition to meeting all the above requirements for advancement to journeyman status, the airman must also complete successfully a Career Development Course (a correspondence course) designed for that specialty.

Master Training

Master training resembles journeyman training in every way, except that the standards of performance and knowledge are higher and the OJT review schedule is retarded by 2 months for each review (meaning that review deadlines are the 14th,³ 20th, and 26th months of training). High proficiency in the supervisory tasks of the STS is expected, as it is in the specialty's job tasks (completing each task quickly and accurately, and telling or showing others how to perform each task).

TRAINING SUPPORT

Training simulators, devices, and other support materials have been developed for Active Air Force training personnel and are used primarily by them. We could not discover any instance where training devices or simulators were developed primarily with the Air Reserve Forces specialist in mind. Training publications are standard throughout the Air Force and are readily available to units in the Air Reserve Forces.

²This 12th-month supervisor's review is omitted for members of the Active Air Force.

³This review is omitted for members of the Active Air Force.

The activities of the Air Force's FTD (see Appendix H for more information) are important to the training support of the Air Reserve Forces. These detachments are widely dispersed among Air Force bases throughout the United States. They offer programs of instruction -- often in system-specific courses -- which are based upon requests for training help from units (both Active and Reserve Component) normally based in the FTD's geographical area. FTDs are small, flexible, and responsive, and are equipped with devices, simulators, and with system components themselves as aids to training.

THE RESERVE COMPONENT TRAINING ENVIRONMENT

The training environment of the Air Guard and the Air Force Reserve differs markedly from that of the Active Air Force. The primary training difficulties caused by the Reserve Component environment are related to the limitations on time available. In general, members of Air Guard and Air Force Reserve units attend approximately 38 days of military duty each year. These days are divided between a periodic Inactive Duty Training (IDT) phase (approximately 24 days) and active duty Annual Training (AT) phase (approximately 14 days). Additional periods of training may be authorized on special occasions when the need is demonstrated.

Selected units of the Air Reserve Forces are required to maintain a higher-than-standard level of readiness. The operating tempo of these units is raised, and their full-time support staffing levels are raised accordingly. Normally, the IDT phase consists of a series of unit training assemblies of about 2 days each month. IDT for most (about 69 percent) of the Air Force Reserve units is performed at major Active Air Force installations, which they share with Active Air Force units. Many Air Guard units are assigned to municipal or other airfields with no direct access to Active Air Force facilities or equipment, and they perform their IDT there. The AT phase for both

Guard and Reserve units is normally conducted at some other location, coordinated with the major command which is to be the gaining command of the Air Reserve Forces unit in wartime.

The peacetime workload of units of the Air Reserve Forces resembles that expected during war. While peacetime operating tempos are lower, the nature and the specifics of the work duplicate those of wartime. Workloads for individual specialists generally support satisfactory levels of OJT and OJE. Another important factor in the support of individual training in units is the existence of sizeable full-time support staffs in the study specialties (with the possible exception of the 304X4 specialty). These staffs are really pools of skilled, noncommissioned officers available to assist in the continued training of individual logistics specialists.

Members of the Air Guard and the Air Force Reserve attending technical training for the first time have a potential advantage in having already been assigned to equipped units of the Air Reserve Forces. If their AFSC is related to a specific major Air Force system, their technical skill training can be concentrated on that system, to the exclusion of others. Active Air Force trainees, who normally do not learn their units of assignment until technical training is approaching completion, cannot afford the same amount of specialization.

SUMMARY

The Air Force's approach to training both the Active and Reserve Component logistics specialists was designed for the Active Component airman. That approach requires a long period of institutional, technical training followed by formal, structured OJT for the remainder of the airman's career. Many additional, mid-career courses are made available by the ATC, but those courses are usually designed for a specific weapon system or assignment; they are not AFSC-producing courses.

The STS is the foundation for all specialty training in the Air Force. In turn, it is based on OSRs, which result from surveys of Active Component airmen. Though the percentage of total Air Force logistics specialists assigned to the Guard/Reserve is large and growing, these specialists do not participate in the generation of OSRs.

Air Force OJT is a rigorous, structured program. Reserve Component airmen face the same formal performance and knowledge requirements within OJT as do their Active Air Force counterparts.

FTDs are a valuable technical training resource for members of the Guard/Reserve. Though the main mission of FTDs is not centered on the Reserve Component, the quantity of Air Force Reserve and Air Guard graduates of FTD courses shows substantial use of the FTDs by members of the Air Reserve Forces.

5. OBSERVATIONS

TRAINING REQUIRED

Logistics specialists of the Reserve Component are required to maintain the same level of skill as Active Component logistics specialists. These specialists directly affect the Guard and Reserve Air Wing's ability to generate sorties and are required to deploy at the same time as the flying squadrons. Because such a large fraction of the Air Force's force structure is in the Reserve Components, these specialists will be required to deploy immediately to support most serious contingencies. There will be no time after mobilization for them to improve their skills. Therefore, the Air Force peacetime training approach must continuously sustain the skills of logistics specialists in the Reserve Component at a level that will allow immediate deployment without additional training.

TRAINING STRATEGY

The present strategy for training Reserve Component airmen is basically an extension of the training approach and programs designed to support the Active Air Force. The specific programs supporting an AFSC are based on a detailed and periodic job survey of the Active Component. To the extent that the job is the same in the Active and Reserve Components, this survey is enough. But, because the survey is taken within the Active Component only, unique aspects of the Guard/Reserve job (e.g., unique equipment) are not included.

Although the current strategy is not designed for the Reserve Component, there are several factors which permit the training programs for logistics specialists to work:

- High Proportion of Experienced Specialists. First, the high proportion of experienced specialists in each unit (one-third to one-half) reduces the training problem significantly. Prior-service personnel bring 4 or more years of job experience to the job. The 30 percent of each unit that are full-time support personnel are available to attend long schools during their reserve career. These specialists represent a core group of highly experienced airmen in each unit. Their primary need is to sustain skills through training. Additionally, they act as technical experts for the training of less experienced specialists.
- Field Training Detachments. Second, the FTDs offer readily available, local, and responsive training support to units. Although they were not established to support Reserve Component training, their geographic dispersion allows them to support Reserve Component units on a regional basis. FTDs represent a concept of distributing high quality technical training to reservists. While FTDs are not fully exploited now, considerable Reserve Component training does occur routinely.
- Air Reserve Forces' Training Environment. Finally, the Air Reserve Forces' training environment is supportive of routine hands-on technical training. The training for flying units of the Air Reserve Forces generates significant technical workloads for logistics specialists. The work is similar to the tasks that these specialists will perform in wartime. This workload thus supports the OJT program and enables the reservists to gain realistic hands-on experience.

No one of these factors (or two together) would guarantee success. All factors together seem to be producing success.

APPENDIX A

AIR FORCE GROUND RADIO COMMUNICATIONS SPECIALIST/TECHNICIAN

SPECIALTY: 304X4 (Air Force Specialty Code (AFSC)).

TITLE: Ground Radio Communications Specialist/Technician.

PHYSICAL WORK CAPACITY: Standard Light Duty (able to lift 40 pounds).

QUALIFICATIONS FOR AWARD OF AFSC (INITIAL CLASSIFICATION)

3 and 5 Skill Levels

The following general qualifications relate to the award of this AFSC:

- A score of at least 65 in the Electronic Aptitude area of the Armed Services Vocational Aptitude Battery (ASVAB) (mandatory);
- Knowledge of electrical and radio theory (mandatory);
- Ability to interpret management information and technical orders, diagrams, and schematic drawings (mandatory);
- Completion of high school with courses in physics and mathematics (desirable);
- Experience in tuning, installing, maintaining, and repairing ground radios and ancillary equipment, using special test equipment (mandatory);
- Completion of a basic ground radio communications equipment maintenance course (desirable);
- Normal color vision (mandatory);
- A physical profile showing moderately good health (mandatory); and
- A SECRET security clearance (mandatory).

7 Skill Level

The following general qualifications relate to the award of this AFSC:

- Qualification as a Ground Radio Communications Specialist (mandatory);
- Experience in supervising the tuning, installing, maintaining, and repairing (including modifying and overhauling) of ground radio equipment using special test equipment (mandatory);
- Completion of the prescribed seven-level management course¹ (mandatory); and
- Completion of an advanced ground radio communications equipment maintenance course (desirable).

Additional Specialty Information

In addition to the AFSC itself, the Air Force uses a number of numerical and alphabetical designators to show supplementary or complementary skills, experience, training, or other similar information helpful in the designation of qualifications appropriate to military positions, to airmen themselves, or to both. Some of these designators are used as AFSC prefixes or suffixes, and some are used separately from, but in conjunction with, the AFSC under consideration. Due to the large quantity of these designators, and due to the fact that they are intended to augment and complement, rather than to modify, the normal AFSCs, they are not considered further in this appendix.

¹This course, taught under Major Command auspices, provides skills appropriate for noncommissioned officers irrespective of AFSC. No technical logistics training is contained in the course.

THE JOB

General

The Air Force Ground Radio Communications Specialist or Technician installs, maintains, and repairs many different types of ground radios² used by the Air Force.

At both the apprentice and journeyman levels,³ this specialist's duties include installation, setup and activation, preventive maintenance, repair, recordkeeping, and -- at the journeyman level -- supervision of radio equipment maintenance people. All this work is performed on the radios themselves and on their related or ancillary equipment. The work involves the use of testing techniques and equipment, plans, performance and assembly specifications, diagnostic procedures, checklists, and manufacturer's and other manuals and handbooks, as well as technical orders, modification work orders, and local procedures.

As a journeyman, the Ground Radio Communications Specialist conducts and participates in on-the-job training programs. The journeyman supervises subordinates by assigning maintenance work, reviewing completed repairs, and instructing in improved work techniques.

²About 20 makes and models of commercial and military voice communication radios make up most of the equipment population to be serviced by this specialist. The radios represent a broad spectrum of wave propagation (from low frequency to ultra-high frequency), depending on the type of communication needed. They normally represent heavy, long-term installations, although the Air Force's tactical radios are portable and rugged.

³The Air Force (in Air Force Regulation 35-1) identifies apprentices (3 skill level) as airmen who have basic knowledge within an AFSC but who lack the experience and proficiency to perform most job tasks without supervision. Journeyman (5 skill level), on the other hand, have shown proficiency in their AFSC; they can reasonably be expected to perform on the job without direct supervision.

As a master,⁴ this specialist's title becomes Ground Radio Communications Technician. In that capacity, he advises supported units and others on technical problems associated with ground radio equipment, including those problems related to the installation and repair of the equipment, as well as any overhaul and modification aspects that are appropriate. Working with drawings, plans, equipment specifications, and similar documents, this master specialist plans and schedules work assignments. He establishes priorities and evaluates subordinates' performance, providing technical expertise and supervision in teaching and training those less experienced and less competent. He manages work flow, production, and quality control on jobs under his jurisdiction.

Areas of Assignment

Assignment opportunities within the Air Force for 304X4 airmen follow predictable lines. A comparison among units of assignment of 304X4 billets across components, however, shows interesting differences. While the majority (51 percent) of Active Air Force billets as well as the preponderance (83 percent) of Air Force Reserve⁵ positions in this specialty are related to a general communications role, including air traffic control for established air bases, the greatest single portion (41 percent) of Air National Guard positions are assigned to tactical communications units. Table A-1 contains a more comprehensive comparison of these assignments.

⁴"Master" in this working note refers to Air Force specialists who have attained the 7 skill level. They are airmen who have "gained a high degree of technical knowledge in their AFSC and . . . have acquired supervisory capability through training and experience." (See paragraphs 1 through 3d, Air Force Regulation 35-1.)

⁵In this appendix, several terms are used interchangeably to refer to the Air National Guard and the Air Force Reserve. The Air National Guard may be called the Air Guard or ANG. The acronym is used in tables and figures. Similarly, the Air Force Reserve is referred to as AFRES in tables and figures. Together, these two elements comprise the Air Reserve Forces, or ARF, the Guard/Reserve, or the Reserve Component.

**TABLE A-1. DISTRIBUTION OF 304X4 POSITIONS
AMONG MAJOR AIR FORCE FUNCTIONS**

KINDS OF UNITS	DISTRIBUTION ¹			
	Active Spaces	ANG Spaces	AFRES Spaces	RC ² Dependence (Percent)
Air traffic control for interim bases (AF Kind Code ATA)	None	50	None	100
Combat communications, providing tactical communications and air traffic control for theater combat air operations (AF Kind Code CCS)	389	699	None	64
Communications, including air traffic control for established air bases and auxiliary air base communication (AF Kind Code CMN)	2,364	140	74	8
Engineering and installation (including design and siting) of ground communications systems (AF Kind Code EIG)	129	375	None	74
Installation of electronics equipment and systems, including mobile depot maintenance (AF Kind Code EIS)	134	None	None	0
Electronic Security Command (AF Kind Code ESY)	360	None	6	2
Tactical control, providing support for the use of air space by tactical air forces (AF Kind Code TCT)	268	282	None	50
Other missions and functions	1,022	181	9	16
Totals	4,666	1,727	89	28

¹Distribution is shown according to Air Force (AF) Kind Code. The Kind Code is a broad representation of unit groupings according to the "title" or "kind" of unit involved. To the extent that the unit title describes the unit mission or function, the Kind Code represents that mission or function also.

²Reserve Component.

NOTE: The term "spaces" denotes positions.

Peacetime versus Wartime

The Ground Radio Communications Specialist or Technician performs essentially the same tasks under wartime conditions as those he performs in peacetime. The 304X4 airman may face different physical security requirements under wartime conditions, but his technical job requirements do not change from those he faces during peacetime.

These communications specialists characteristically install and repair only one or two types of equipment during any single, peacetime assignment. Experience with point-to-point ground communications, for example, can lead to successive assignments in which that type of equipment is used. The same pattern occurs with air traffic control radio communications equipment. The Air Force personnel system meets the challenge of this type of subspecialization through the use of Special Experience Identifiers (SEIs).⁶ The 304X4 airmen, with over 30 system-specific SEIs authorized, may experience some performance difficulty as war-induced individual reassessments occur to positions associated with unfamiliar ground communications equipment.

Implications of Force Modernization

At the present time, only one major new ground radio communications system, a high-frequency single sideband system, is scheduled for distribution among Air Force units beginning this year. Distribution is to continue through Fiscal Year 1988 and will include Reserve Component units as well as

⁶ SEIs represent one set of identifiers discussed as "Additional Specialty Information" at the beginning of this appendix. Presently, 426 SEIs are authorized for Air Force positions and personnel. The SEI augments and supplements AFSC designations and serves to ease the assignment of Air Force people into technical positions by expressing additional qualifications of personnel and additional desirable characteristics associated with positions or billets.

Active Component units. While new, this system will not require special familiarization or conversion training for 304X4 specialists in the units. In cases where training becomes necessary, however, the Air Training Command characteristically establishes a special, resident course at Keesler Air Force Base, Mississippi, and training quotas are distributed among units which will receive the new communications equipment. Field Training Detachments (see Appendix H for more information) are not routinely used to support conversion or upgrade installation and maintenance training for 304X4 airmen.

Career Progression/Merging

The Air Force Ground Radio Communications Specialist is normally awarded the 3 skill level (or apprentice) as an E2 (Airman) or E3 (Airman First Class). The award of the 5 skill level (journeyman) must accompany or precede promotion to E4 (Senior Airman/Sergeant). Satisfactory progress leads to promotion to E5 (Staff Sergeant) while still a journeyman. The award of the 7 skill level (master) must accompany or precede promotion to E6 (Technical Sergeant). As a 30474 master technician, this airman may progress through the grade of E7 (Master Sergeant).

No merging or combination of career ladders occurs at the 3, 5, or 7 skill levels within this specialty. Such a merging does take place at the next grade (E8 or Senior Master Sergeant, 30499), or manager/supervisor level, but further consideration of that merging is beyond the scope of this study. This means, of course, that at the journeyman and master levels, the 304X4 airman generally exercises technical supervision only over subordinate airmen in the same specialty or over those others assigned temporarily to assist in doing 304X4 work.

THE INCUMBENT POPULATION

Personal Attributes

Age. The airmen of this specialty display a similar age pattern through progressive enlisted grades, whether members of the Active Air Force, the Air National Guard, or the Air Force Reserve, although the airmen of the upper grades of the Reserve Component are slightly older as a group. Table A-2 displays these relationships.

TABLE A-2. 304X4 INCUMBENT PERSONAL ATTRIBUTES -- AVERAGE AGE

GRADE	COMPONENT	MEAN AGE (YEARS)
E1-E3	Active	22.1
	ANG	23.5
	AFRES	IDA ¹
E4	Active	24.5
	ANG	28.2
	AFRES	30.4
E5	Active	28.8
	ANG	33.3
	AFRES	32.3
E6	Active	34.5
	ANG	38.8
	AFRES	34.9
E7	Active	38.7
	ANG	40.2
	AFRES	44.3

¹Insufficient data available.

Aptitude Area Scores. Comparison of scores on the Electronic Aptitude subtest of the ASVAB shows consistent similarity when compared on a grade-by-grade basis. The data displayed in Table A-3 are raw test scores. This fact, coupled with the evolutionary changes to the ASVAB test forms and the use of different qualifying thresholds at different times, dictates

caution in interpreting this information. Only cohorts within each grade should be compared.

TABLE A-3. 304X4 INCUMBENT PERSONAL ATTRIBUTES --
AVERAGE ASVAB SUBSCORES

(Electronic Aptitude)

GRADE	COMPONENT	MEAN SCORE
E1-E3	Active	75.5
	ANG	74.5
	AFRES	IDA ¹
E4	Active	61.0
	ANG	65.8
	AFRES	68.2
E5	Active	60.8
	ANG	65.8
	AFRES	64.8
E6	Active	67.4
	ANG	69.4
	AFRES	64.2
E7	Active	52.0
	ANG	57.7
	AFRES	71.0
Totals		62.7
		67.6
		65.9

¹Insufficient data available.

NOTE: The minimum acceptable score for training in this specialty is currently 65. Earlier minimum scores, subtests, and test forms are different from those used today.

Civilian Education Completed. The Air Force, in both its Active and Reserve Components, generally enlists and retains high school graduates for training and service as 304X4 specialists. The Air Reserve Forces do show appreciably larger groups of 304X4s who have achieved high school graduation through award of the General Education Development equivalency certificate

than does the Active Air Force. Beyond that dissimilarity, however, these specialists are quite similar in civilian education completed. Table A-4 contains these comparisons.

TABLE A-4. 304X4 INCUMBENT PERSONAL ATTRIBUTES --
CIVILIAN EDUCATION COMPLETED

(Percentage of Total)

GRADE	COMPONENT	NON-GRADUATE ¹	GED ²	HSDG ³	SOME COLLEGE ⁴
E1-E3	Active	1.3	0	92.0	6.7
	ANG	4.9	5.6	82.9	6.6
	AFRES	IDA ⁵	IDA	IDA	IDA
E4	Active	0.9	0	89.2	9.9
	ANG	1.4	6.3	81.6	10.7
	AFRES	0	0	88.2	11.8
E5	Active	0.6	0	77.8	21.6
	ANG	0.6	5.8	79.1	14.5
	AFRES	2.4	0	73.8	23.8
E6	Active	0.2	0	58.7	41.1
	ANG	0.5	4.5	73.8	21.2
	AFRES	0	7.8	62.8	29.4
E7	Active	0	0	50.4	49.6
	ANG	0.6	6.4	76.4	16.6
	AFRES	0	10.5	52.6	36.9
Totals	Active	0.8	0	80.9	18.3
	ANG	1.5	5.5	78.5	14.5
	AFRES	0.8	5.3	67.9	26.0

¹Incumbents who have not graduated from high school.

²Incumbents who have completed high school through General Education Development (GED) equivalency.

³Incumbents who are high-school-diploma graduates (HSDG) but have no college work.

⁴Incumbents who have completed at least some college or university work.

⁵Insufficient data available.

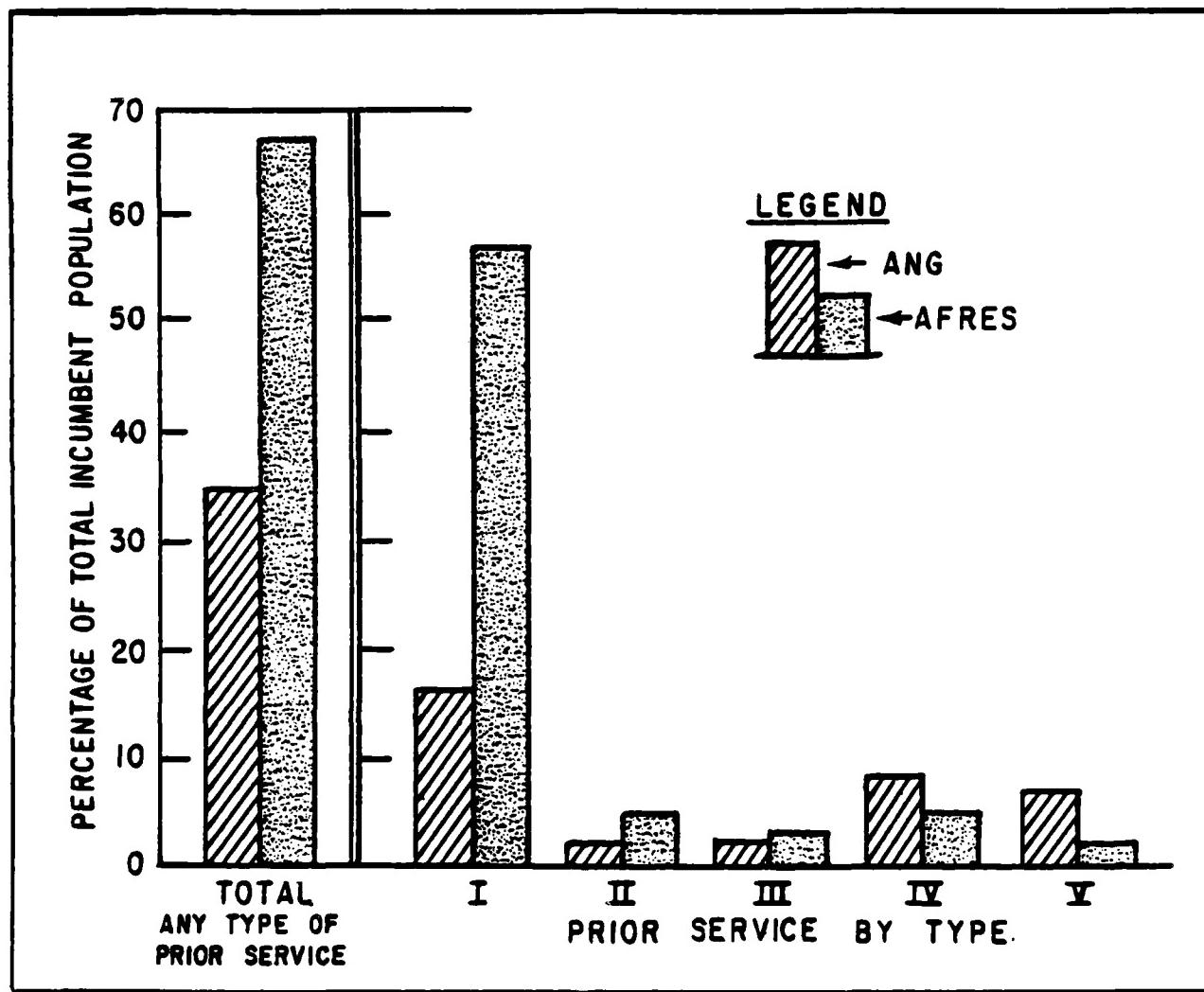
Experience

Prior Military Service.⁷ Over two-thirds (67.4 percent) of all Air Force Reserve 304X4 specialists/technicians have had prior active military service of some kind. Within the Air Force Reserve, 61.9 percent have had related prior service (see Figure A-1), and over one-half (55.8 percent) have served previously in the Active Air Force in precisely the same AFSC. In the Air National Guard the levels of prior active military service are somewhat lower. Almost 35 percent of the 304X4s bring some kind of prior active service experience to their present Air National Guard jobs, including 19.2 percent who have had related prior service, and 15.3 percent who have served as 304X4s in the Active Air Force previously. Figure A-1 shows the nature and percentages of prior active military service for Air National Guard and Air Force Reserve airmen in this AFSC.

Length of Service. The impression of similarity of incumbent populations across components is continued by a comparative, grade-by-grade review of lengths of total military service for members of the Active Air Force, the Air National Guard, and the Air Force Reserve serving as Ground Radio Communications Specialists and Technicians. Table A-5 contains these data.

⁷ The prior service data presented in this section have been developed by the Defense Manpower Data Center using the Reserve Component Common Personnel Data System and a cumulative loss file containing all military service separation data since 1971. As publication of this report began, the National Guard Bureau's Air National Guard Support Center and Headquarters, Air Force Reserve were able to compute prior service information on Guardsmen and Reservists based on their own separate data files. That information shows higher levels of prior active service experience among both Air Guardsmen and Air Force Reservists than are discussed in this section. See Appendix I for more information.

FIGURE A-1. 304X4 INCUMBENT EXPERIENCE -- PRIOR ACTIVE MILITARY SERVICE



NOTE: EXPLANATION OF TYPES OF PRIOR SERVICE:

I PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
SAME SPECIALTY.

II PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
NOT IN THE SAME SPECIALTY BUT IN THE SAME CAREER FIELD.

III PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE AND
IN SAME CAREER FIELD.

I - II & III RELATED SERVICE (61.9% AFRES) (19.2% ANG)

IV PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE BUT
NOT IN THE SAME CAREER FIELD.

V PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE BUT
NOT IN SAME CAREER FIELD.

IV & V UNRELATED SERVICE (5.5% AFRES) (15.4% ANG)

TABLE A-5. 304X4 INCUMBENT EXPERIENCE --
LENGTH OF TOTAL MILITARY SERVICE

GRADE	COMPONENT	MEAN LENGTH OF SERVICE (YEARS)
E1-E3	Active	2.5
	ANG	1.7
	AFRES	IDA ¹
E4	Active	4.7
	ANG	5.6
	AFRES	6.2
E5	Active	8.9
	ANG	9.9
	AFRES	8.8
E6	Active	14.8
	ANG	15.1
	AFRES	11.7
E7	Active	19.1
	ANG	19.3
	AFRES	20.0

¹Insufficient data available.

Time in Grade. Beyond the lowest enlisted grades, Air National Guard 304X4s display slightly longer time-in-grade characteristics than do their Air Force Reserve or Active Air Force counterparts. Table A-6 displays the specific information, by grade.

Civilian Occupation. A review of current civilian occupations reported by 304X4 incumbents in the Reserve Component shows that 21.8 percent of all Air National Guard personnel assigned to this specialty hold civilian jobs with direct technical application to the military job. The figure for members of the Air Force Reserve is 35.4 percent.

Full-Time Support. Within the Air Reserve Forces, civilian technicians and Active Guard/Reserve airmen serving full time in this specialty account for 10 percent of all 304X4 positions in the Selected Reserve. As

TABLE A-6. 304X4 INCUMBENT EXPERIENCE -- TIME IN GRADE

GRADE	COMPONENT	TIME IN GRADE (YEARS)
E1-E3	Active	1.1
	ANG	1.0
	AFRES	IDA ¹
E4	Active	1.4
	ANG	1.9
	AFRES	1.7
E5	Active	2.6
	ANG	3.3
	AFRES	1.9
E6	Active	2.2
	ANG	4.2
	AFRES	2.3
E7	Active	1.9
	ANG	4.6
	AFRES	3.2

¹Insufficient data available.

might be anticipated, the proportion of these positions occupied by full-time support personnel rises with the level of enlisted grade. With very few exceptions, these support people are required to mobilize and deploy with the units in which they now serve.

The degree of compatibility between the specific, full-time job of the Ai Reserve Technician and his military AFSC assignment in the Air Force Reserve unit is very high, since each civilian work position is designed with the military AFSC and unit vacancy as the starting point. In the Air National Guard the compatibility of civilian job and military assignment is somewhat less specific for full-time technicians, but civilian work assignments for these technicians do fall generally within the same career field as the AFSC of their military billet.

Table A-7 contains specific information on full-time support staff.

TABLE A-7. 304X4 FULL-TIME SUPPORT FOR AIR RESERVE FORCES

GRADE	TOTAL AUTHORIZED POSITIONS	FULL-TIME SUPPORT ¹	
		Assigned	Percentage of Authorized Strength
E3	19	0	0
E4	627	7	1
E5	532	36	7
E6	393	76	19
E7	245	70	29
Totals	1,816	189	10

¹Does not include Active Component advisers or civilian clerical employees of the Department of the Air Force.

THE TRAINING PROGRAM

After completion of Basic Military Training of 6 weeks at Lackland Air Force Base, Texas, the airman (whether in the Active or Reserve Component) destined to become a Ground Radio Communications Specialist enters the Air Force's Technical Training Center at Keesler Air Force Base, Mississippi for a program of instruction lasting 25 weeks and 2 days. Upon successful completion of this training, the airman (by now an E3 or Airman First Class) is classified as a 30434 and moves to the unit of initial assignment. There, this specialist begins a formal, technical, on-the-job training program providing upgrade training. This training program will continue throughout the airman's remaining career through the 7 skill level (master) and the E7 or Master Sergeant enlisted grade. No further formal, institutional training is required in this Air Force specialty, whether the incumbent is a member of the active or reserve forces.

The Air Force on-the-job training program provides for supervised specialty development in knowledge ("knowledge training") and in task accomplishment ("qualification training"). For each Air Force specialty, a lengthy Specialty Training Standard (STS) is used throughout on-the-job training. The STS is a document listing requirements for subject knowledge, task knowledge, and task performance. It becomes a part of the airman's file within the unit of assignment. In advancing from the 3 to 5 skill level in the 304X4 specialty, each airman must:

- Complete satisfactorily a Career Development Course designed for this specialty by the Extension Course Institute of the Air University, Maxwell Air Force Base, Alabama. This course includes a career knowledge examination for which a passing grade must be achieved.
- Demonstrate satisfactory experience (to the supervisor's and commander's satisfaction) in testing, tuning, adjusting, maintaining, and repairing ground radio equipment and in using specialized test equipment.
- Be certified (by the supervisor and commander) as competent to accomplish 5 skill level tasks listed in the 304X4 STS.

A similar set of requirements exists for advancement from the 5 to 7 skill level, with the additional requirement that the experience demonstrated must include supervision of the work described above.

On-the-job training and on-the-job experience have been the sole vehicle used to acquire and sustain this specialist's and technician's skills once institutional apprentice training is successfully completed. While over 20 additional, journeyman- and master-level training courses are available to the 304X4 under the auspices of the Air Training Command, none of these courses is an AFSC-awarding course. They all provide supplementary training oriented around specific equipment or missions. Some of the courses result in the award of an SEI (after additional field experience) and some do not. Members of the Air Reserve Forces attend these courses (some of which are

altered to accommodate the restricted nature of the reserve training environment) as they relate to Air Reserve Forces equipment or missions.

APPENDIX B

AIR FORCE WEAPON CONTROL SYSTEMS MECHANIC/TECHNICIAN

SPECIALTY: 321X2 (Air Force Specialty Code (AFSC)).

TITLE: Weapon Control Systems Mechanic/Technician.

PHYSICAL WORK CAPACITY: Standard Light Duty (able to lift 40 pounds).

QUALIFICATIONS FOR AWARD OF AFSC (INITIAL CLASSIFICATION)

3 and 5 Skill Levels

The following general qualifications relate to the award of this AFSC:

- A score of at least 65 in the Electronic Aptitude area of the Armed Forces Vocational Aptitude Battery (ASVAB) (mandatory);
- Knowledge (mandatory) of theory and application of:
 - Electronic and mechanical principles,
 - Testing and measuring instruments,
 - Wiring diagrams and block diagrams, and
 - Air Force maintenance concepts;
- Knowledge of the functioning of such interrelated systems and functions as automatic flight controls, instruments, navigation, communications, radars, flight sensing, countermeasures, munitions-release or -launch systems, and their relationship to weapon control systems (desirable);
- Completion of high school with courses in physics and mathematics (desirable);
- Experience (mandatory) in:
 - Analysis and isolation of weapon control systems malfunctions,
 - Use of test equipment, or
 - Maintenance and repair of electrical, electronic, and mechanical equipment;

- Completion of a basic weapon control systems course (desirable);
- Normal color vision (mandatory);
- A physical profile showing moderately good health, with excellent eyesight (mandatory); and
- Qualification at the 5 skill level, as a minimum, for entry into the "C Shredout" (see following section).

7 Skill Level

The following general qualifications relate to the award of this AFSC:

- Qualification as a Weapon Control Systems Mechanic (mandatory);
- Experience (mandatory) in the supervision of either:
 - Analysis and repair of weapon control systems defects, or
 - Isolation of electrical, electronic, and mechanical malfunctions of computers, radars, sights, armament controls, and related systems;
- Completion of the prescribed seven-level management course¹ (mandatory); and
- Completion of an advanced weapon control systems course (desirable).

Additional Specialty Information

AFSC Suffixes. Suffixes (also called shredouts) provide the principal means of identifying specific equipment or functions with any given Air Force specialty. This specialty, designated by AFSC, is authorized four suffixes. They are identified below:

- Suffix A: F-106 A/B:(MA-1, ASQ-25 Systems);
- Suffix C: F-106 A/B:(MA-1, ASQ-25 Subsystems);
- Suffix P: F-4 C/D:(APO-109/APA-165); and
- Suffix Q: F-4E:(APQ-120).

¹This course, taught under Major Command auspices, provides skills appropriate for noncommissioned officers irrespective of AFSC. No technical logistics training is contained in the course.

Other Information. In addition to the AFSC and AFSC suffixes, the Air Force uses a number of numerical and alphabetical designators to show supplementary or complementary skills, experience, training, or other similar information helpful in the designation of qualifications appropriate to military positions, to airmen themselves, or to both. Some of these designators are used as AFSC prefixes, while some are used separately from, but in conjunction with, the AFSC under consideration. Due to the large quantity of these designators, and due to the fact that they are intended to augment and complement, rather than to modify, the normal AFSCs, they are not considered further in this appendix.

THE JOB

General

The Air Force Weapon Control Systems Mechanic or Technician maintains and repairs the weapon control systems² mounted in the specific aircraft associated with the AFSC suffix.

At both the apprentice and journeyman (32132 and 32152) levels,³ this specialist performs preventive maintenance by inspecting and testing the control systems, their removable components (often called line replaceable units), and other equipment associated with the systems, using specialized

²In this context, a weapon control system consists of a movable, aircraft-mounted radar or target acquisition system, linked through a computer by electronic-mechanical means to armament control systems: (1) bomb release mechanisms and (2) missile launching mechanisms. The radar system may involve pulsed, doppler, or pulsed-doppler principles, and may utilize electro-optical and/or infrared sighting and sensor systems. Both the target acquisition system and the armament control systems consist of a complex of line replaceable units, their connectors, as well as permanent structural installations.

³The Air Force (in Air Force Regulation 35-1) identifies apprentices (3 skill level) as airmen who have basic knowledge within an AFSC but who lack the experience and proficiency to perform most job tasks without supervision. Journeyman (5 skill level), on the other hand, have shown proficiency in their AFSC; they can reasonably be expected to perform on the job without direct supervision.

test equipment. This preventive maintenance includes the cleaning and servicing of assemblies and the monitoring of system performance.

In addition, the 321X2 specialist installs, tunes, adjusts, aligns, and calibrates these systems using all normal system controls. The 321X2 also conducts built-in tests of the systems. Repair and troubleshooting activities include isolation of malfunctions within any or all components or subsystems, removal and disassembly of faulty mechanisms, and replacement of defective parts, as well as reassembly of components after repair or replacement has been completed.

The journeyman (5 skill level) must perform apprentice-level work more skillfully and must complete more complex tasks individually. This specialist must also supervise the work of apprentices and conduct on-the-job training. As a master,⁴ or 7 skill level technician, this airman is responsible for increased technical supervisory responsibility as well as increased complexity in the maintenance work to be performed personally.

Areas of Assignment

Generally, 321X2 airmen assigned to Active Component units are (in 65 percent of the cases) assigned to the aircraft generation or component repair squadrons associated directly with the Air Force's decentralized maintenance concept (explained in the Air Force's Multi-Command Regulation 66-5). This concept is practiced principally in this Service's four major tactical air forces.⁵ On the other hand, almost all (98 percent

⁴"Master" in this working note refers to Air Force mechanics who have attained the 7 skill level. They are airmen who have "gained a high degree of technical knowledge in their AFSC and . . . have acquired supervisory capability through training and experience." (See paragraphs 1 through 3d, Air Force Regulation 35-1.)

⁵Alaskan Air Command, Pacific Air Forces, Tactical Air Command, and U.S. Air Forces, Europe.

Air Guard,⁶ 99 percent Air Force Reserve) 321X2 specialist positions of the Air Reserve Forces are assigned to consolidated aircraft maintenance squadrons, where aircraft generation and component repair take place within the same squadron. Table B-1 shows these distributions of billets.

TABLE B-1. DISTRIBUTION OF 321X2 POSITIONS AMONG MAJOR AIR FORCE FUNCTIONS

KINDS OF UNITS	DISTRIBUTION ¹			
	Active Spaces	ANG Spaces	AFRES Spaces	RC ² Dependence (Percent)
Aircraft generation, providing a broad range of on-aircraft maintenance (AF Kind Code AIG)	554	None	None	0
Consolidated maintenance, including both on- and off-aircraft maintenance (AF Kind Code CLM)	18	990	267	99
Component repair, providing off-aircraft repair of equipment and components (AF Kind Code COR)	340	None	None	0
Fighter interceptor, involving the execution of fighter interceptor missions (AF Kind Code FIN)	227	4	None	2
Other missions and functions	247	13	3	6
Totals	1,386	1,007	270	48

¹Distribution is shown according to Air Force (AF) Kind Code. The Kind Code is a broad representation of unit groupings according to the "title" or "kind" of unit involved. To the extent that the unit title describes the unit mission or function, the Kind Code represents that mission or function also.

²Reserve Component.

NOTE: The term "spaces" denotes positions.

⁶In this appendix, several terms are used interchangeably to refer to the Air National Guard and the Air Force Reserve. The Air National Guard may be called the Air Guard or ANG. The acronym is used in tables and figures. Similarly, the Air Force Reserve is referred to as AFRES in tables and figures. Together, these two elements comprise the Air Reserve Forces, or ARF, the Guard/Reserve, or the Reserve Component.

Peacetime versus Wartime

The work experience gained by the 321X2 airman during peacetime is directly applicable to tasks expected in war. While operating tempo will undoubtedly increase, and while the mechanic/technician may face battle damage for the first time, the maintenance routine of testing-diagnosis-disassembly-repair/replacement-calibration-retesting on the same type of aircraft to which the specialist is assigned during peacetime should continue with very little change.

Implications of Force Modernization

Continuous upgrade and modernization of electronic devices and subsystems have been the rule for several decades in the Air Force. In addition, development of computer-aided controls and control systems (such as weapon control systems) has accelerated as well. The 321X2 mechanic and technician assigned to the Air Reserve Forces face an inevitable series of system refinements and upgrades as aircraft are improved. The Air Force's system of Field Training Detachments (see Appendix H for more information) was originally established to provide training to meet the maintenance challenges of conversion to new aircraft models and systems. As these changes are anticipated, courses are routinely established by Field Training Detachments concentrating on that type of aircraft.

Career Progression/Merging

Irrespective of the AFSC suffix or shredout to be pursued (each has a different technical training program at the 3 skill level), the Weapon Control Systems Mechanic is awarded the annotated AFSC (32132A, 32132C, 32132P, or 32132Q), denoting apprentice status, upon completion of "tech training" as an E2 (Airman) or E3 (Airman First Class). Award of journeyman

status, or 5 skill level, must accompany or precede promotion to E4 (Senior Airman/Sergeant). Satisfactory progress leads to promotion to E5 (Staff Sergeant) while still a journeyman. The award of the 7 skill level (master) must accompany or precede promotion to E6 (Technical Sergeant). As a 32172 master technician (the formal title change from "mechanic" to "technician" occurs with the award of the 7 skill level), this airman may progress through the grade of E7 (Master Sergeant).

No merging or combination of career ladders occurs at the 3, 5, or 7 skill levels within this specialty. Such a merging does take place at the next grade (E8 or Senior Master Sergeant, 32199), or manager/supervisor level, but further consideration of that merging is beyond the scope of this study. This means, of course, that at the journeyman and master levels, the 32152 or 32172 airman generally exercises technical supervision only over subordinate airmen in the same specialty, or over those others assigned temporarily to assist in doing 321X2 work.

THE INCUMBENT POPULATION

Personal Attributes

Age. Guard/Reserve mechanics and technicians in this specialty are slightly older than their Active Air Force counterparts, but only slightly. A comparison of average ages, by grade, is contained in Table B-2.

Aptitude Area Scores. Air Force Reserve 321X2s achieve modestly higher scores on a grade-by-grade basis in the Electronic Aptitude subtest of the ASVAB than do their counterparts in the Air National Guard or the Active

TABLE B-2. 321X2 INCUMBENT PERSONAL ATTRIBUTES -- AVERAGE AGE

GRADE	COMPONENT	MEAN AGE (YEARS)
E1-E3	Active	22.1
	ANG	22.7
	AFRES	22.4
E4	Active	24.5
	ANG	26.6
	AFRES	26.8
E5	Active	28.7
	ANG	31.6
	AFRES	30.6
E6	Active	33.5
	ANG	38.1
	AFRES	36.9
E7	Active	37.5
	ANG	44.8
	AFRES	38.3

Component. The data displayed in Table B-3 are raw test scores. This fact, coupled with the evolutionary changes to the ASVAB test forms and the use of different qualifying thresholds at different times, dictates caution in interpreting this information. Only cohorts within each grade should be compared.

Civilian Education Completed. A preponderance of both Active and Reserve Component airmen assigned to this specialty are high-school-diploma graduates, a significant portion of whom -- from both components -- attend college upon reaching the upper enlisted grades. The entire population is a uniform one overall, with Air Reserve Force accessions showing some acceptance (at about the 3 percent level) of individuals who have been awarded the

TABLE B-3. 321X2 INCUMBENT PERSONAL ATTRIBUTES --
AVERAGE ASVAB SUBSCORES

(Electronic Aptitude)

GRADE	COMPONENT	MEAN SCORE
E1-E3	Active	73.5
	ANG	76.0
	AFRES	76.4
E4	Active	62.7
	ANG	63.8
	AFRES	76.1
E5	Active	61.9
	ANG	62.2
	AFRES	64.8
E6	Active	64.3
	ANG	65.8
	AFRES	71.1
E7	Active	IDA ¹
	ANG	64.0
	AFRES	IDA
Totals		66.8
		66.1
		71.2

¹Insufficient data available.

NOTE: The minimum acceptable score for training in this specialty is currently 65. Different minimum scores and different test forms have been used earlier.

General Education Development high school graduate equivalency certificate.

Table B-4 displays these data on a grade-by-grade basis.

TABLE B-4. 321X2 INCUMBENT PERSONAL ATTRIBUTES --
CIVILIAN EDUCATION COMPLETED

(Percentage of Total)

GRADE	COMPONENT	NON-GRADUATE ¹	GED ²	HSDG ³	SOME COLLEGE ⁴
E1-E3	Active	0.7	0	95.0	4.3
	ANG	4.6	2.3	81.7	11.4
	AFRES	1.9	5.7	83.0	9.4
E4	Active	1.1	0	85.5	13.4
	ANG	0.7	4.8	87.6	6.9
	AFRES	0	3.9	88.2	7.9
E5	Active	0.7	0	81.9	17.4
	ANG	0	2.2	82.2	15.6
	AFRES	1.5	3.1	83.1	12.3
E6	Active	0	0	72.1	27.9
	ANG	0	2.4	77.2	20.4
	AFRES	1.5	0	75.4	23.1
E7	Active	0	0	68.3	31.7
	ANG	2.1	3.2	78.7	16.0
	AFRES	0	0	71.4	28.6
Totals		0.6	0	85.2	14.2
		ANG	1.1	81.2	14.9
		AFRES	1.2	81.5	14.5

¹Incumbents who have not graduated from high school.

²Incumbents who have completed high school through General Education Development (GED) equivalency.

³Incumbents who are high-school-diploma graduates (HSDG) but have no college work.

⁴Incumbents who have completed at least some college or university work.

⁵Insufficient data available.

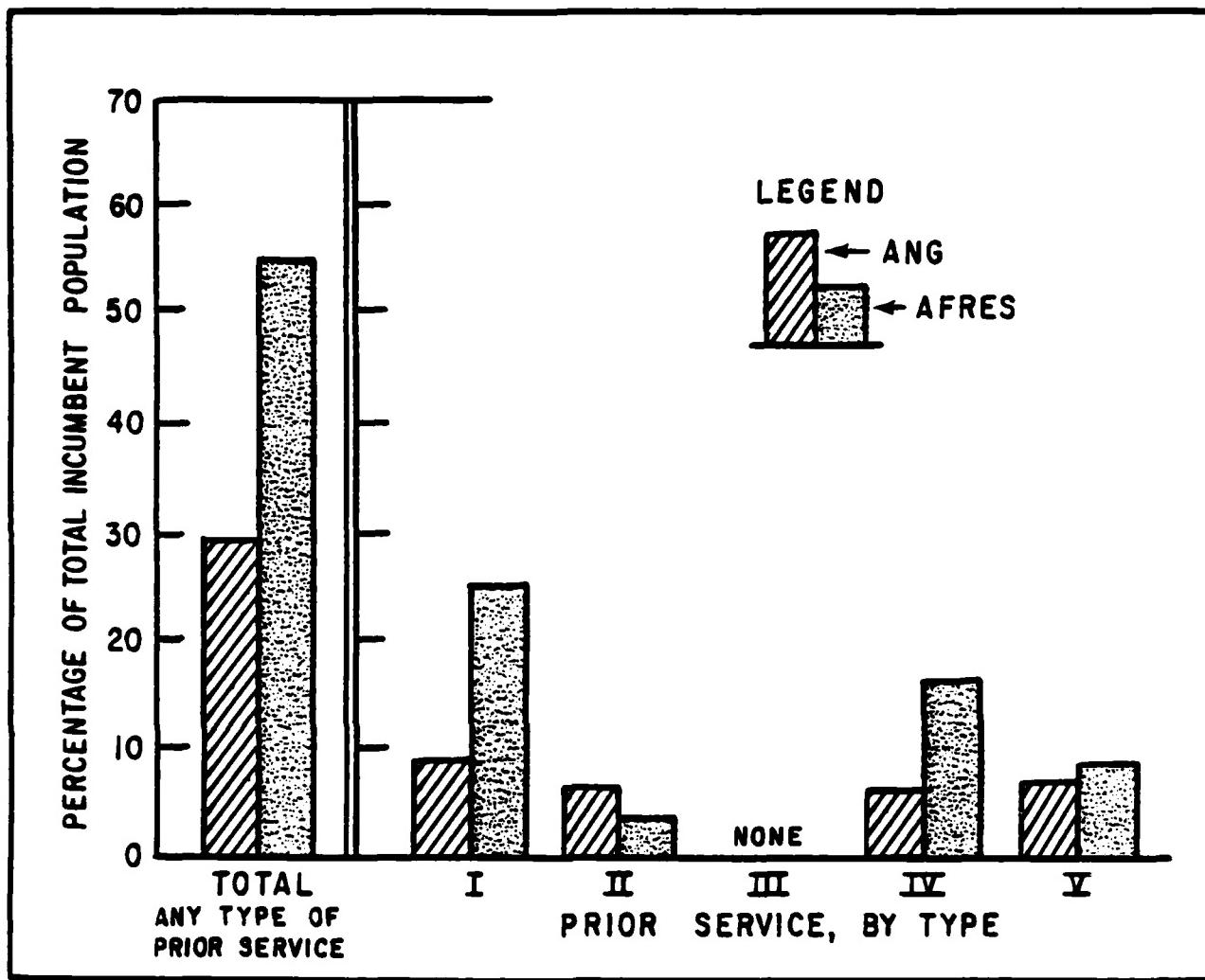
Experience

Prior Military Service.⁷ Among Reserve Component 321X2 mechanics/technicians, over one-half (53.3 percent) assigned to the Air Force Reserve have had some type of active military service, including 28.7 percent with a related kind of prior service, and 25.6 percent having served on extended active duty as 321X2s. The comparable figures for the Air National Guard are lower: 29.8 percent (any kind of service), 15.8 percent with related prior service, and 8.9 percent with service as an 321X2, respectively. Figure B-1 shows these and related data associated with prior active military service.

Length of Service. As the upper enlisted grades are reached, members of the Air National Guard assigned to this specialty show greater lengths of total military service than do members of either the Air Force Reserve or the Active Component. Other than that, populations of both the Active Component and the Reserve Component Weapon Control Systems Mechanics/Technicians are quite similar. Table B-5 contains these data.

⁷ The prior service data presented in this section have been developed by the Defense Manpower Data Center using the Reserve Component Common Personnel Data System and a cumulative loss file containing all military service separation data since 1971. As publication of this report began, the National Guard Bureau's Air National Guard Support Center and Headquarters, Air Force Reserve were able to compute prior service information on Guardsmen and Reservists based on their own separate data files. That information shows higher levels of prior active service experience among both Air Guardsmen and Air Force Reservists than are discussed in this section. See Appendix I for more information.

FIGURE B-1. 321X2 INCUMBENT EXPERIENCE -- PRIOR ACTIVE MILITARY SERVICE



NOTE: EXPLANATION OF TYPES OF PRIOR SERVICE:

I PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
SAME SPECIALTY.

II PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
NOT IN THE SAME SPECIALTY BUT IN THE SAME CAREER FIELD.

III PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE AND
IN SAME CAREER FIELD.

I - II & III RELATED SERVICE (28.7% AFRES) (15.8% ANG)

IV PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE BUT
NOT IN THE SAME CAREER FIELD.

V PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE BUT
NOT IN SAME CAREER FIELD.

IV & V UNRELATED SERVICE (24.6% AFRES) (14.0% ANG)

TABLE B-5. 321X2 INCUMBENT EXPERIENCE --
LENGTH OF TOTAL MILITARY SERVICE

GRADE	COMPONENT	MEAN LENGTH OF SERVICE (YEARS)
E1-E3	Active	2.6
	ANG	1.4
	AFRES	0.7
E4	Active	4.4
	ANG	4.9
	AFRES	3.4
E5	Active	8.9
	ANG	9.7
	AFRES	8.3
E6	Active	13.9
	ANG	16.3
	AFRES	14.6
E7	Active	18.1
	ANG	24.4
	AFRES	15.6

Time in Grade. In a longevity pattern similar to that of length of present military service, 321X2 airmen beyond the rank of E3 who are assigned to the Air National Guard have considerably more time in each enlisted grade than their counterparts in the Air Force Reserve or the Active Component. Otherwise, as was the case with length of present military service data, the populations appear to be similar. Table B-6 contains information on time in grade.

Civilian Occupation. A review of current civilian occupations reported by 321X2 incumbents in the Reserve Component shows that 43.6 percent of all Air National Guard personnel assigned to this specialty hold civilian jobs with direct technical application to the military job. The figure for members of the Air Force Reserve is 33.7 percent.

TABLE B-6. 321X2 INCUMBENT EXPERIENCE -- TIME IN GRADE

GRADE	COMPONENT	TIME IN GRADE (YEARS)
E1-E3	Active	1.2
	ANG	1.0
	AFRES	0.7
E4	Active	1.3
	ANG	1.7
	AFRES	0.9
E5	Active	2.9
	ANG	3.7
	AFRES	1.9
E6	Active	2.2
	ANG	5.7
	AFRES	3.6
E7	Active	1.6
	ANG	6.7
	AFRES	2.2

Full-Time Support. Within the Air Reserve Forces, civilian technicians and Active Guard/Reserve (AGR) airmen serving full time in this specialty account for 40 percent of all 321X2 positions in the Selected Reserve. As might be anticipated, the proportion of these positions occupied by full-time support personnel rises with an increase in enlisted grade. At the Technical Sergeant (E6) level, 97 percent of the 32171 billets are occupied by full-time civilian technicians or AGR personnel. With very few exceptions, these support people are required to mobilize and deploy with the units in which they now serve.

The degree of compatibility between the specific, full-time job of the Air Reserve Technician and his military AFSC assignment in the Air Force Reserve unit is very high, since each civilian work position is designed with the military AFSC and unit vacancy as the starting point. In the Air National Guard, the compatibility of the full-time support job and military assignment

is somewhat less specific. In the Air National Guard, work assignments for full-time civilian technicians do fall generally within the same career field as the AFSC of their military billet.

Table B-7 contains more detailed information on 321X2 full-time support staff.

TABLE B-7. 321X2 FULL-TIME SUPPORT FOR AIR RESERVE FORCES

GRADE	TOTAL AUTHORIZED POSITIONS	FULL-TIME SUPPORT ¹	
		Assigned	Percentage of Authorized Strength
E3	221	16	7
E4	374	29	8
E5	300	152	51
E6	237	230	97
E7	145	83	57
Totals	1,277	510	40

¹Does not include Active Component advisers or civilian clerical employees of the Department of the Air Force.

THE TRAINING PROGRAM

After completion of Basic Military Training of 6 weeks at Lackland Air Force Base, Texas, new Active Component and Reserve Component airmen begin differing periods of 32132 training, depending upon the aircraft which they will be assigned to serve. All technical training of apprentice (3 skill level) Weapon Control Systems Mechanics takes place at Lowry Air Force Base, Colorado. Table B-8 lists the length of these programs.

TABLE B-8. 32132 TECHNICAL TRAINING PROGRAMS

AFSC	AIRCRAFT/SYSTEMS	LENGTH OF TRAINING (WEEKS)
32132 (001) ^a	A-7D	14.6
32132 (002) ^a	F-5E, A-10	14.2
32132A	F-106A/B:(MA-1, ASQ-25 Systems)	19.2
32132C ^b	F-106A/B:(MA-1, ASQ-25 Subsystems)	19.0
32132P	F-4C/D:(APO-109/APA-165)	20.0
32132Q	F-4E:(APQ-120)	24.0

^aThese two courses produce specialist trained to work on the aircraft listed, but they do not produce separate identification by AFSC suffix. Air Reserve Force personnel managers make assignments to specific training courses based upon each trainee's known unit of assignment.

^bThis training program was terminated in October 1984 because of the phaseout of the F-106 system.

Upon successful completion of this training, the airman (by now an E3 or Airman First Class) is classified, as shown in Table B-8, and moves to the unit of initial assignment. There, this specialist begins a formal, technical, on-the-job training program providing upgrade training. This training program will continue throughout the airman's remaining career through the 7 skill level (master) and the E7 or Master Sergeant enlisted grade. No further formal, institutional training is required in this Air Force specialty, whether the incumbent is a member of the active or reserve forces.

The Air Force on-the-job training program provides for supervised specialty development in knowledge ("knowledge training") and in task accomplishment ("qualification training"). For each Air Force specialty, a lengthy Specialty Training Standard (STS) is used throughout on-the-job training. The STS is a document listing requirements for subject knowledge, task knowledge, and task performance. It becomes a part of the airman's file within the unit

of assignment. In advancing from the 3 to 5 skill level in the 321X2 specialty, each airman must:

- Complete satisfactorily a Career Development Course designed for this specialty by the Extension Course Institute of the Air University, Maxwell Air Force Base, Alabama. This course includes a career knowledge examination for which a passing grade must be achieved.
- Demonstrate satisfactory experience (to the supervisor's and commander's satisfaction) in testing, adjusting, maintaining, and repairing the weapon control systems of the assigned aircraft, and in using specialized test equipment.
- Be certified (by the supervisor and commander) as competent to accomplish 5 skill level tasks listed in the 321X2 STS.

A similar set of requirements exists for advancement from the 5 to 7 skill level, with the additional requirement that the experience demonstrated must include supervision of the testing, adjusting, maintaining, and repairing of weapon control systems.

On-the-job training and on-the-job experience have been the sole vehicle used to acquire and sustain this mechanic's and technician's skills once institutional apprentice training is successfully completed. While several additional, journeyman- and master-level training courses may be made available to the 321X2 under the auspices of the Air Training Command, none of these courses is an AFSC-awarding course.

APPENDIX C

AIR FORCE AVIONICS AEROSPACE GROUND EQUIPMENT SPECIALIST/TECHNICIAN

SPECIALTY: 326X0 (Air Force Specialty Code (AFSC)).

TITLE: Avionics Aerospace Ground Equipment Specialist/Technician.

PHYSICAL WORK CAPACITY: Standard Light Duty (able to lift 40 pounds).

QUALIFICATIONS FOR AWARD OF AFSC (INITIAL CLASSIFICATION)

3 and 5 Skill Levels

The following general qualifications relate to the award of this AFSC:

- A score of at least 75 in the Electronic Aptitude area of the Armed Services Vocational Aptitude Battery (ASVAB) (mandatory);
- Knowledge of electrical theory and electronic fundamentals, including solid state, binary numbering systems, Boolean algebra, and computer logic (mandatory);
- Knowledge of the theory of electrically activated mechanical devices (mandatory);
- Knowledge of the operating principles of measuring and testing devices (mandatory);
- Satisfactory ability to use schematic and other diagrams and technical publications, and satisfactory ability to use and care for special and standard hand tools (mandatory);
- Completion of high school with courses in algebra and trigonometry (desirable);
- Experience in aligning and calibrating avionics aerospace ground equipment (AGE) and in replacing defective parts, repairing faulty components, isolating malfunctions, and modifying equipment (mandatory);
- Completion of a basic avionics AGE course (mandatory);
- Normal color vision (mandatory);

- A physical profile showing moderately good health, with excellent eyesight (mandatory); and
- A SECRET security clearance (mandatory).

7 Skill Level

The following general qualifications relate to the award of this AFSC:

- Qualification as an Avionics AGE Specialist (Mandatory);
- Experience in performing or supervising the following work on avionics AGE: installation, maintenance, repair, overhaul, service, calibration, and certification (mandatory);
- Completion of prescribed seven-level management course¹ (mandatory); and
- Completion of an advanced avionics AGE course (desirable).

Additional Specialty Information

AFSC Suffixes. Suffixes (also called shredouts) provide the principal means of identifying specific equipment or functions with any given Air Force specialty. This specialty, designated by AFSC 326X0, is authorized two suffixes. They are identified below:

- Suffix C: F/RF-4 Peculiar AGE; and
- Suffix D: A-7D/C-5 Avionics AGE.

Other Information. In addition to the AFSC and AFSC suffixes, the Air Force uses a number of numerical and alphabetical designators to show supplementary or complementary skills, experience, training, or other similar information helpful in the designation of qualifications appropriate to military positions, to airmen themselves, or to both. Some of these designators are used as AFSC prefixes and some are used separately from, but in conjunction with, the AFSC under consideration. Due to the large quantity

¹This course, taught under Major Command auspices, provides skills appropriate for noncommissioned officers irrespective of AFSC. No technical logistics training is contained in the course.

of these designators, and due to the fact that they are intended to augment and complement, rather than to modify, the normal AFSCs, they are not considered further in this appendix.

THE JOB

General

The Air Force Avionics AGE Specialist or Technician performs periodic and unscheduled maintenance and calibration of shop-based test and other support equipment for the avionics (electrical and electronic) systems installed in the type of aircraft to which the airman is assigned. Persons assigned to this specialty work on F/RF-4, A-7D, and C-5 aircraft only.

At both the apprentice and journeyman levels,² this specialist's duties include identification and isolation of malfunctions in avionics AGE by studying charts and diagrams and by using equipment self-test capabilities and shop standards. Using both special and standard tools (including soldering devices and special electronic instruments), this airman also calibrates, repairs, and modifies the supported equipment, including removal and replacement of minute subassemblies and parts and electrical and cooling connections. Duties also involve detailed and interpretive inspection of equipment operations, including the operation of components and subassemblies.

As a journeyman, the Avionics AGE Specialist (in addition to performing apprentice tasks more expertly) participates in and supervises on-the-job training, assigns jobs to subordinates, supervises and reviews performance of others less skilled, and instructs subordinates in proper work techniques.

²The Air Force (in Air Force Regulation 35-1) identifies apprentices (3 skill level) as airmen who have basic knowledge within an AFSC but who lack the experience and proficiency to perform most job tasks without supervision. Journeyman (5 skill level), on the other hand, have shown proficiency in their AFSC; they can reasonably be expected to perform on the job without direct supervision.

As a master,³ this specialist's title becomes Avionics AGE Technician. In that capacity, the master performs more complex inspections on avionics AGE and interprets inspection findings in order to assess the adequacy of corrective action. This technician plans and schedules work assignments and establishes work methods and standards. Establishing priorities and conducting on-the-job training are also normal duties.

Areas of Assignment

A majority (61 percent) of the 326X0 specialist and technician positions in the Active Air Force are found in the component repair squadrons which comprise a part of the decentralized maintenance system characteristic of the tactical air forces.⁴ Another 14 percent of these billets are assigned to the Active Air Force avionics maintenance squadrons making up a part of the centralized maintenance system of the Strategic Air Command (SAC) and the Military Airlift Command (MAC).⁵ By contrast, fully 99 percent of the Air National Guard⁶ and 69 percent of the Air Force Reserve 326X0 positions are located in consolidated air maintenance squadrons which bring together disparate maintenance skills in smaller units. Table C-1 contains this information.

³"Master" in this working note refers to Air Force Specialists who have attained the 7 skill level. They are airmen who have "gained a high degree of technical knowledge in their AFSC and . . . have acquired supervisory capability through training and experience." (See paragraph 1 through 3d, Air Force Regulation 35-1.)

⁴Alaskan Air Command, Pacific Air Forces, Tactical Air Command, and U.S. Air Forces, Europe.

⁵Air Training Command (ATC) and Air Force Systems Command also utilize the centralized maintenance system in their shops and on their flightlines, but the SAC and MAC 326X0 positions outnumber those in ATC and the Air Force Systems Command by a wide margin.

⁶In this appendix, several terms are used interchangeably to refer to the Air National Guard and the Air Force Reserve. The Air National Guard may be called the Air Guard or ANG. The acronym is used in tables and figures. Similarly, the Air Force Reserve is referred to as AFRES in tables and figures. Together, these two elements comprise the Air Reserve Forces, or ARF, the Guard/Reserve, or the Reserve Component.

TABLE C-1. DISTRIBUTION OF 326X0 POSITIONS
AMONG MAJOR AIR FORCE FUNCTIONS

KINDS OF UNITS	DISTRIBUTION ¹			
	Active Spaces	ANG Spaces	AFRES Spaces	RC ² Dependence (Percent)
Avionics maintenance, including on- and off-aircraft maintenance of electronics subsystems (AF Kind Code AVN)	28	None	9	24
Consolidated maintenance, including both on- and off-aircraft maintenance (AF Kind Code CLM)	6	188	29	97
Component repair, providing off-aircraft repair of equipment and components (AF Kind Code COR)	122	None	None	0
Technical training in occupational specialties and special courses (AF Kind Code TTA)	11	None	None	0
Other missions and functions	33	1	None	3
Totals	200	189	29	52

¹Distribution is shown according to Air Force (AF) Kind Code. The Kind Code is a broad representation of unit groupings according to the "title" or "kind" of unit involved. To the extent that the unit title describes the unit mission or function, the Kind Code represents that mission or function also.

²Reserve Component.

NOTE: The term "spaces" denotes positions.

Peacetime versus Wartime

The work experience gained by the 326X0 airman during peacetime is directly applicable to tasks expected in war. While unit and shop operating tempo will undoubtedly increase, and while this specialist/technician may face battle damage for the first time, the servicing and repair of avionics AGE required to keep assigned aircraft aloft should involve the same tasks and require precisely the same skills on the same type of aircraft.

Implications of Force Modernization

For decades, the Air Force has faced a continuous stream of upgrades, conversions, improvements, and modifications to its aircraft, to their subsystems, and to their support equipment as well. The origin of this Service's Field Training Detachments (see Appendix H for more information) lies in these continuous upgrade requirements and in the training implications for maintenance brought about by these changes. The 326X0 specialists and technicians of the Air Reserve Forces will be required to work with new, improved, probably more complex, equipment as the force continues to modernize. Assistance in meeting those requirements is available, however, in the Field Training Detachments.

Career Progression/Merging

Normal career and skill progression for the Avionics AGE Specialist/Technician is made up of the sequential events listed in Table C-2.

TABLE C-2. CAREER AND SKILL PROGRESSION FOR THE 326X0

EVENT	SKILL LEVEL/ AFSC	ENLISTED GRADE	TITLE
Technical Training Graduation and Classification	3 (apprentice)/ 32630C or D	E3 (Airman First Class)	Specialist
Upgrade Reclassifi- cation	5 (journeyman)/ 32650C or D	E4 (Senior Airman) E4 (Sergeant) E5 (Staff Sergeant)	Specialist Specialist Specialist
Upgrade Reclassifi- cation	7 (master)/ 32670C or D	E6 (Technical Sergeant) E7 (Master Sergeant)	Technician Technician

No merging or combination of career ladders involving this specialty occurs until grade E8 (Senior Master Sergeant), 32699, "Integrated Avionics Superintendent." Further consideration of this manager/supervisor level of development is beyond the scope of this study.

THE INCUMBENT POPULATION

Personal Attributes

Age. Air National Guard and Active Air Force 326XOs show similar ages at similar grades. Air National Guard specialists/technicians are slightly, but consistently, older at all grade levels. The Air Force Reservist population in this AFSC (29 people) is too small for meaningful consideration on a grade-by-grade basis. Table C-3 contains these data.

TABLE C-3. 326XO INCUMBENT PERSONAL ATTRIBUTES -- AVERAGE AGE

GRADE	COMPONENT	MEAN AGE (YEARS)
E1-E3	Active	21.8
	ANG	23.7
	AFRES	IDA ¹
E4	Active	24.0
	ANG	24.4
	AFRES	IDA
E5	Active	29.2
	ANG	32.0
	AFRES	IDA
E6	Active	33.8
	ANG	37.2
	AFRES	IDA
E7	Active	38.5
	ANG	IDA
	AFRES	IDA

¹ Insufficient data available.

Aptitude Area Scores. ASVAB Electronic Aptitude subtest data for these airmen are displayed in Table C-4. These data are raw test scores. This fact, coupled with the evolutionary changes to the ASVAB test forms and the use of different qualifying thresholds at different times, dictates caution in interpreting this information. Only cohorts within each grade should be compared.

TABLE C-4. 326X0 INCUMBENT PERSONAL ATTRIBUTES --
AVERAGE ASVAB SUBSCORES

(Electronic Aptitude)

GRADE	COMPONENT	MEAN SCORE
E1-E3	Active	71.9
	ANG	77.2
	AFRES	IDA ¹
E4	Active	59.6
	ANG	60.7
	AFRES	IDA
E5	Active	60.7
	ANG	56.6
	AFRES	IDA
E6	Active	IDA
	ANG	78.5
	AFRES	IDA
E7	Active	IDA
	ANG	IDA
	AFRES	IDA
Totals	Active	65.5
	ANG	67.9
	AFRES	65.8

¹Insufficient data available.

NOTE: The minimum acceptable score for training in this specialty is currently 75. Different minimum scores and different test forms have been used earlier.

Civilian Education Completed. The 326X0 specialists and technicians have completed high school (in the Air National Guard, a small percentage has been awarded the General Education Development high school graduate equivalency certificate). In the upper grades, many attend college. The Air Force Reserve incumbent population is too small for consideration by any distributed groupings. Table C-5 contains civilian education data.

TABLE C-5. 326X0 INCUMBENT PERSONAL ATTRIBUTES --
CIVILIAN EDUCATION COMPLETED

(Percentage of Total)

GRADE	COMPONENT	NON-GRADUATE ¹	GED ²	HSDG ³	SOME COLLEGE ⁴
E1-E3	Active	0	0	95.5	4.5
	ANG	0	6.2	84.4	9.4
	AFRES	IDA ⁵	IDA	IDA	IDA
E4	Active	1.5	0	91.3	7.3
	ANG	2.1	0	95.8	2.1
	AFRES	IDA	IDA	IDA	IDA
E5	Active	0	0	68.8	31.2
	ANG	0	12.0	72.0	16.0
	AFRES	IDA	IDA	IDA	IDA
E6	Active	0	0	45.0	55.0
	ANG	3.2	3.2	74.2	19.4
	AFRES	IDA	IDA	IDA	IDA
E7	Active	0	0	56.3	43.7
	ANG	IDA	IDA	IDA	IDA
	AFRES	IDA	IDA	IDA	IDA
Totals	Active	0.3	0	80.1	19.6
	ANG	1.4	4.3	84.4	9.9
	AFRES	IDA	IDA	IDA	IDA

¹Incumbents who have not graduated from high school.

²Incumbents who have completed high school through General Education Development (GED) equivalency.

³Incumbents who are high-school-diploma graduates (HSDG) but have no college work.

⁴Incumbents who have completed at least some college or university work.

⁵Insufficient data available.

Experience

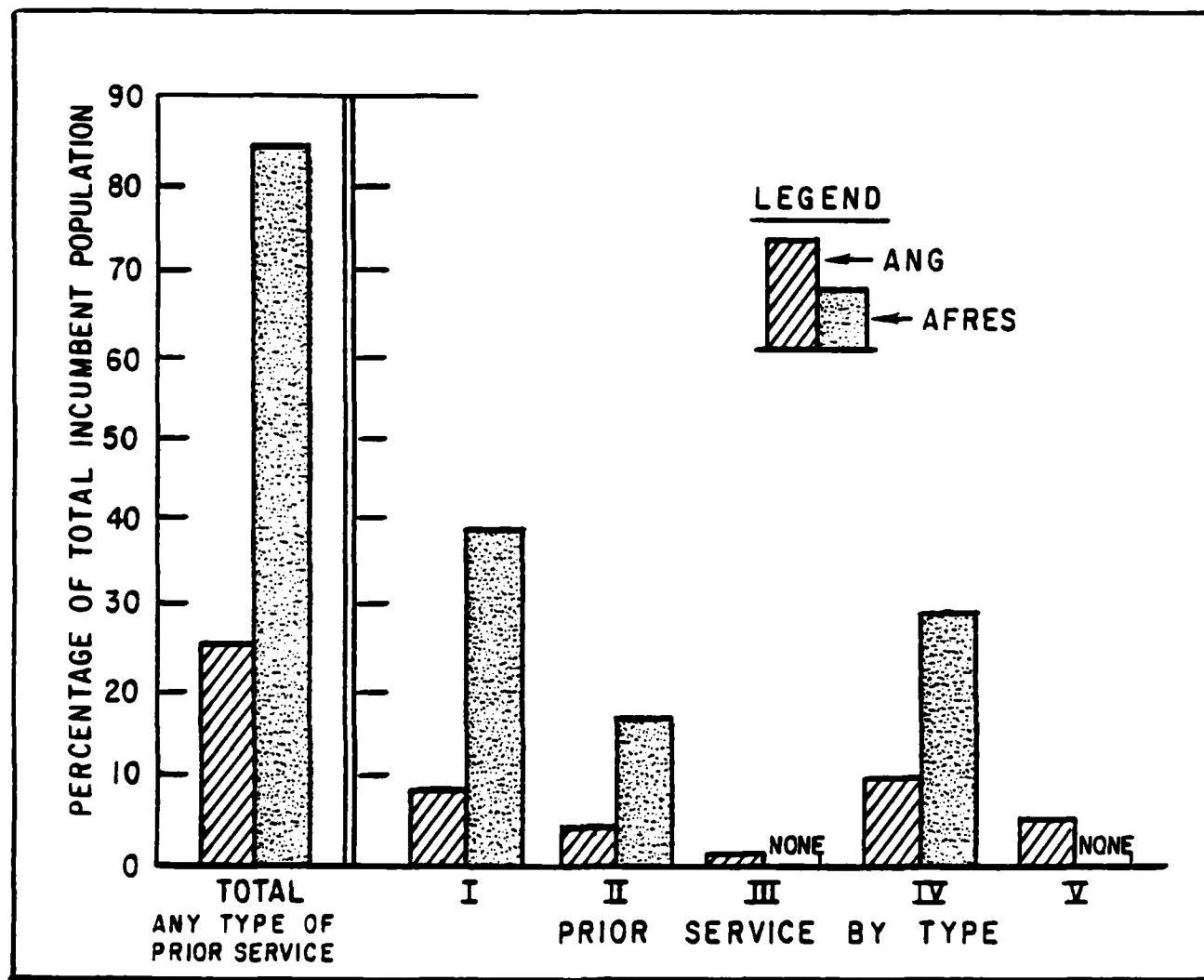
Prior Military Service.⁷ Over 84 percent of all Air Force Reservists assigned as 326X0s have had some type of prior active military service, including 55.6 percent who have had a related kind of prior service, and 38.9 percent who have served as 326X0s in the Active Air Force. The Air Guard figures are lower: 25.2 percent with any kind of prior active service, including 12.1 percent who have served in related skills and 8.0 percent who have served in the Active Air Force as 326X0s. Figure C-1 contains prior active military service information.

Length of Service. Comparison of Active Air Force and Air National Guard 326X0s shows strong similarity. The population of Air Force Reserve 326X0s is too small for such a distributed comparison. Table C-6 contains length of total service data.

Time in Grade. Active Air Force and Air National Guard Avionics AGE Specialists/Technicians are remarkably similar in time-in-grade characteristics, except for the grade of Technical Sergeant, where the Reserve Component E6 holds a 3-year longevity edge over Active Component counterparts.

⁷The prior service data presented in this section have been developed by the Defense Manpower Data Center using the Reserve Component Common Personnel Data System and a cumulative loss file containing all military service separation data since 1971. As publication of this report began, the National Guard Bureau's Air National Guard Support Center was able to compute Air Guard prior service information based on the Center's own data files. That information shows higher levels of prior active service experience among Air Guardsmen than are discussed in this section. A similar set of separate computations by Headquarters, Air Force Reserve, shows a lower level of prior active military service for 326X0 Reservists. Appendix I contains a more complete discussion of these data.

FIGURE C-1. 326XO INCUMBENT EXPERIENCE -- PRIOR ACTIVE MILITARY SERVICE



NOTE: EXPLANATION OF TYPES OF PRIOR SERVICE:

I PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
SAME SPECIALTY.

II PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
NOT IN THE SAME SPECIALTY BUT IN THE SAME CAREER FIELD.

III PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE AND
IN SAME CAREER FIELD.

I - II & III RELATED SERVICE (55.6% AFRES) (12.1% ANG)

IV PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE BUT
NOT IN THE SAME CAREER FIELD.

V PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE BUT
NOT IN SAME CAREER FIELD.

IV & V UNRELATED SERVICE (28.7% AFRES) (13.1% ANG)

TABLE C-6. 326X0 INCUMBENT EXPERIENCE --
LENGTH OF TOTAL MILITARY SERVICE

GRADE	COMPONENT	MEAN LENGTH OF SERVICE (YEARS)
E1-E3	Active	2.3
	ANG	1.7
	AFRES	IDA ¹
E4	Active	4.5
	ANG	3.7
	AFRES	IDA
E5	Active	9.3
	ANG	10.7
	AFRES	IDA
E6	Active	14.1
	ANG	16.8
	AFRES	IDA
E7	Active	19.1
	ANG	IDA
	AFRES	IDA

¹Insufficient data available.

Air Force Reservists assigned to the 326X0 specialty are not numerous enough to permit a grade-by-grade comparison. Table C-7 displays time-in-grade information.

Civilian Occupation. A review of current civilian occupations reported by 326X0 incumbents in the Reserve Component shows that 35.2 percent of all Air National Guard personnel assigned to this specialty hold civilian jobs with direct technical application to the military job. The figure for members of the Air Force Reserve is 63.0 percent.

TABLE C-7. 326X0 INCUMBENT EXPERIENCE -- TIME IN GRADE

GRADE	COMPONENT	TIME IN GRADE (YEARS)
E1-E3	Active	1.0
	ANG	1.2
	AFRES	IDA ¹
E4	Active	1.3
	ANG	1.3
	AFRES	IDA
E5	Active	3.1
	ANG	4.2
	AFRES	IDA
E6	Active	2.1
	ANG	5.2
	AFRES	IDA
E7	Active	1.7
	ANG	IDA
	AFRES	IDA

¹ Insufficient data available.

Full-Time Support. Over one-quarter of authorized Reserve Component billets in this specialty are occupied by full-time civilian technicians or Active Guard/Reserve airmen. The percentage of positions filled by full-time support staff rises with increases in enlisted rank. Table C-8 shows the quantities and relationships involved.

THE TRAINING PROGRAM

Active and Reserve Component airmen who are to become Avionics AGE Specialists first attend the standard Basic Military Training of 6 weeks at Lackland Air Force Base, Texas before beginning the technical training which will lead to their classification as 32630C or 32630D specialists. The location

TABLE C-8. 326X0 FULL-TIME SUPPORT FOR AIR RESERVE FORCES

GRADE	TOTAL AUTHORIZED POSITIONS	FULL-TIME SUPPORT ¹	
		Assigned	Percentage of Authorized Strength
E3	40	0	0
E4	88	6	7
E5	46	18	39
E6	42	21	50
E7	2	6	300
Totals	218	61	28

¹Does not include Active Component advisers or civilian clerical employees of the Department of the Air Force.

and length of that technical training depends upon the aircraft to which they will be assigned. Table C-9 lists the 32630 technical training programs.

TABLE C-9. 32630 TECHNICAL TRAINING PROGRAMS

AFSC PRODUCED	AIRCRAFT	LENGTH OF TRAINING (WEEKS)	LOCATION	REMARKS
None	C-5A	5.6	Lackland Air Force Base (AFB)	Electronic principles course which is a prerequisite for further C-5A training.
32630D	C-5A ¹	13.0	Dover AFB	Follows electronic principles course.
32630D	A-7D ¹	21.0	Lowry AFB	
32630C	F/RF-4	21.0	Lowry AFB	

¹These two courses qualify airmen for classification in the same AFSC. The "D" suffix does not differentiate between those specialists destined for A-7D units or those bound for C-5A units.

Upon successful completion of this training, the airman (by now an E3 or Airman First Class) is classified as a 32630C or 32630D and moves to the unit

of initial assignment. There, this specialist begins a formal, technical, on-the-job training program providing upgrade training. This training program will continue throughout the airman's remaining career through the 7 skill level (master) and the E7 or Master Sergeant enlisted grade. No further formal, institutional training is required in the Air Force specialty, whether the incumbent is a member of the active or reserve forces.

The Air Force on-the-job training program provides for supervised specialty development in knowledge ("knowledge training") and in task accomplishment ("qualification training"). For each Air Force specialty, a lengthy Specialty Training Standard (STS) is used throughout on-the-job training. The STS is a document listing requirements for subject knowledge, task knowledge, and task performance. It becomes a part of the airman's file within the unit of assignment. In advancing from the 3 to 5 skill level in the 326X0 specialty, each airman must:

- Complete satisfactorily a Career Development Course designed for this specialty by the Extension Course Institute of the Air University, Maxwell Air Force Base, Alabama. This course includes a career knowledge examination for which a passing grade must be achieved.
- Demonstrate satisfactory experience (to the supervisor's and commander's satisfaction) in testing, adjusting, maintaining, modifying, and repairing avionics AGE and in using specialized test equipment.
- Be certified (by the supervisor and commander) as competent to accomplish 5 skill level tasks listed in the 326X0 STS.

A similar set of requirements exists for advancement from the 5 to 7 skill level, with the additional requirement that the experience demonstrated must include technical supervision of the testing, adjusting, maintaining, modifying, repairing, and of similar tasks.

On-the-job training and on-the-job experience have been the sole vehicle used to acquire and sustain this specialist's and technician's skills once institutional apprentice training is successfully completed. While isolated,

additional journeyman- and master-level training courses are available to the 326X0 under the auspices of the Air Training Command, none of these courses is an AFSC-awarding course.

APPENDIX D

AIR FORCE AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS SPECIALIST/TECHNICIAN

SPECIALTY: 328X4 (Air Force Specialty Code (AFSC)).

TITLE: Avionic Inertial and Radar Navigation Systems Specialist/Technician.

PHYSICAL WORK CAPACITY: Sustained Moderate Duty (able to lift 70 pounds).

QUALIFICATIONS FOR AWARD OF AFSC (INITIAL CLASSIFICATION)

3 and 5 Skill Levels

The following general qualifications relate to the award of this AFSC:

- A score of at least 65 in the Electronic Aptitude area of the Armed Services Vocational Aptitude Battery (ASVAB) (mandatory);
- Knowledge of electronic principles which apply to avionic inertial and radar aircraft navigation equipment and its associated computers (mandatory);
- Familiarity with and use of Air Force centralized and decentralized maintenance concepts, and successful use of technical orders, wiring diagrams, and schematic drawings (mandatory);
- Knowledge of the principles of the operation of related electronic navigation equipment (desirable);
- Completion of high school with courses in physics and mathematics (desirable);
- Experience in testing (with and without test equipment) and repairing avionic inertial and radar navigation equipment (mandatory);
- Experience in applying computer electronic principles to the maintenance of avionic inertial and radar navigation equipment (mandatory);
- Completion of a basic avionic inertial and radar navigation systems maintenance course (desirable);

- Normal color vision (mandatory);
- A physical profile showing moderately good health, with excellent eyesight (mandatory); and
- A SECRET security clearance.

7 Skill Level

The following general qualifications relate to the award of this AFSC:

- Qualification as an Avionic Inertial and Radar Navigation Systems Specialist (mandatory);
- Experience supervising the work performed by Avionic Inertial and Radar Navigation Systems Specialists (mandatory);
- Experience in installation, repair, fault-isolation, equipment modification, and interpretive use of test equipment -- all with avionic inertial and radar navigation equipment (mandatory);
- Supervisory experience in the repair and modification of related avionic equipment (desirable);
- Completion of the prescribed seven-level management course¹ (mandatory); and
- Completion of an advanced avionic inertial and radar navigation systems maintenance course (desirable).

Additional Specialty Information

In addition to the AFSC itself, the Air Force uses a number of numerical and alphabetical designators to show supplementary or complementary skills, experience, training, or other similar information helpful in the designation of qualifications appropriate to military positions, to airmen themselves, or to both. Some of these designators are used as AFSC prefixes or suffixes, and some are used separately from, but in conjunction with, the AFSC under consideration. Due to the large quantity of these designators, and

¹This course, taught under Major Command auspices, provides skills appropriate for noncommissioned officers irrespective of AFSC. No technical logistics training is contained in the course.

due to the fact that they are intended to augment and complement, rather than to modify, the normal AFSCs, they are not considered further in this appendix.

THE JOB

General

The Air Force Avionic Inertial and Radar Navigation Systems Specialist/Technician maintains and repairs inertial and Doppler navigation systems. "Systems" include general and special navigation computers, other electronic components, and extensive circuitry -- all aboard the aircraft, as well as related ground equipment which serve the onboard components.

At both the apprentice and journeyman levels,² this specialist's work involves inspection, preventive maintenance, component tests, and other diagnostic work, as well as component replacement. Repair and modification of the equipment itself is included. The specialist also maintains appropriate work records. The journeyman supervises apprentices' job performance, provides work critiques, and participates in a structured on-the-job training program, in addition to performing maintenance tasks more skillfully than an apprentice.

As a master,³ this specialist's title becomes Avionic Inertial and Radar Navigation Systems Technician. In that capacity, the 32874 advises

²The Air Force (in Air Force Regulation 35-1) identifies apprentices (3 skill level) as airmen who have basic knowledge within an AFSC but who lack the experience and proficiency to perform most job tasks without supervision. Journeyman (5 skill level), on the other hand, have shown proficiency in their AFSC; they can reasonably be expected to perform on the job without direct supervision.

³"Master" in this working note refers to Air Force specialists who have attained the 7 skill level. They are airmen who have "gained a high degree of technical knowledge in their AFSC and . . . have acquired supervisory capability through training and experience." (See paragraphs 1 through 3d, Air Force Regulation 35-1.)

maintenance people and others on technical problems associated with the work. The master removes and installs major system components and builds and installs antennae and transmission lines. This senior technician also inspects equipment and provides extensive technical supervision. The supervision includes planning and directing work assignments and providing technical training, including on-the-job training.

Areas of Assignment

Forty percent of the 328X4 positions of the Active Air Force are assigned to the Avionics Maintenance Squadrons characteristic of the centralized maintenance philosophy of the Strategic Air Command and the Military Airlift Command.⁴ Thirty-five percent of all Air Force Reserve⁵ billets are also to be found in these same types of squadrons. Another 34 percent of Active Component 328X4 billets are assigned to the aircraft generation squadrons (18 percent) and the component repair squadrons (16 percent) of the tactical air forces⁶ of the United States. Almost all (98 percent) of the Air National Guard positions in the 328X4 specialty, as well as 60 percent of the Air Force Reserve 328X4 billets, are part of the consolidated aircraft maintenance squadrons characteristic of a large segment of the Air Reserve Forces. Table D-1 shows information on 328X4 distribution.

⁴This maintenance concept, formulated broadly in Air Force Regulation 66-1, is also used by the shops and flightlines of the Air Force Systems Command and the Air Training Command.

⁵In this appendix, several terms are used interchangeably to refer to the Air National Guard and the Air Force Reserve. The Air National Guard may be called the Air Guard or ANG. The acronym is used in tables and figures. Similarly, the Air Force Reserve is referred to as AFRES in tables and figures. Together, these two elements comprise the Air Reserve Forces, or ARF, the Guard/Reserve, or the Reserve Component.

⁶Alaskan Air Command, Pacific Air Forces, Tactical Air Command, and U.S. Air Forces, Europe.

TABLE D-1. DISTRIBUTION OF 328X4 POSITIONS
AMONG MAJOR AIR FORCE FUNCTIONS

KINDS OF UNITS	DISTRIBUTION ¹			
	Active Spaces	ANG Spaces	AFRES Spaces	RC ² Dependence (Percent)
Aircraft generation, providing a broad range of on-aircraft maintenance (AF Kind Code AIG)	267	None	None	0
Avionics maintenance, including on- and off-aircraft maintenance of electronics subsystems (AF Kind Code AVN)	589	None	96	14
Consolidated maintenance, including both on- and off-aircraft maintenance (AF Kind Code CLM)	92	529	165	88
Component repair, providing off-aircraft repair of equipment and components (AF Kind Code COR)	232	None	None	0
Field maintenance, emphasizing on- and off-aircraft diagnostic and repair work on subsystems and equipment (AF Kind Code FDM)	52	None	None	0
Other missions and functions	236	12	13	10
Totals	1,468	541	274	36

¹Distribution is shown according to Air Force (AF) Kind Code. The Kind Code is a broad representation of unit groupings according to the "title" or "kind" of unit involved. To the extent that the unit title describes the unit mission or function, the Kind Code represents that mission or function also.

²Reserve Component.

NOTE: The term "spaces" denotes positions.

Peacetime versus Wartime

The 328X4 specialist or technician routinely performs in peacetime those tasks which are to be expected in war. A war will bring an increased operating tempo, and the effects of battle damage will be faced by many for the first time. The wartime flightline and shop may provide a less ideal

atmosphere, but the diagnosis-testing-troubleshoot-remove-repair/replace-retest cycles learned and practiced in peacetime should remain essentially the same under wartime conditions -- and they should involve the same type of aircraft as those assigned in peacetime.

Implications of Force Modernization

Meeting the maintenance training requirements brought about by continuing equipment and system improvements over the past four decades is the principal mission of the Air Force's Field Training Detachments (see Appendix H for more information). While the 328X4 specialists and technicians of the Air Reserve Forces face (because of training time constraints) a stiffer challenge in the inevitable transition or modernization training brought on by new or improved aircraft and navigation systems, the Field Training Detachments represent an established training asset available to help meet the challenge.

Career Progression/Merging

Normal career and skill progression for the Avionic Inertial and Radar Navigation Systems Specialist/Technician is made up of the sequential steps listed in Table D-2.

TABLE D-2. CAREER AND SKILL PROGRESSION FOR THE 328X4

EVENT	SKILL LEVEL/ AFSC	ENLISTED GRADE	TITLE
Technical Training Graduation and Classification	3 (apprentice)/ 32834	E3 (Airman First Class)	Specialist
Upgrade Reclassifi- cation	5 (journeyman)/ 32854	E4 (Senior Airman) E4 (Sergeant) E5 (Staff Sergeant)	Specialist Specialist Specialist
Upgrade Reclassifi- cation	7 (master)/ 32874	E6 (Technical Sergeant) E7 (Master Sergeant)	Technician Technician

No merging or combination of career ladders involving this specialty occurs until grade E8 (Senior Master Sergeant), 32899, "Avionic Communications Navigation Systems Superintendent." Further consideration of this manager/supervisor level of development is beyond the scope of this study.

THE INCUMBENT POPULATION

Personal Attributes

Age. While the 328X4s who are members of the Air Reserve Forces are slightly older, when compared to Active Component airmen of the same grade, the overall impression is one of age similarity. Table D-3 contains this comparative information.

TABLE D-3. 328X4 INCUMBENT PERSONAL ATTRIBUTES -- AVERAGE AGE

GRADE	COMPONENT	MEAN AGE (YEARS)
E1-E3	Active	22.1
	ANG	22.8
	AFRES	23.8
E4	Active	24.5
	ANG	25.6
	AFRES	26.1
E5	Active	28.8
	ANG	31.0
	AFRES	28.7
E6	Active	34.4
	ANG	37.8
	AFRES	35.5
E7	Active	38.3
	ANG	43.3
	AFRES	40.3

Aptitude Area Scores. Electronic Aptitude subtest scores from the ASVAB, when compared across components on a grade-by-grade basis in this specialty, show uneven and unpredictable relationships. The data displayed in

Table D-4 are raw test scores. This fact, coupled with the evolutionary changes to the ASVAB test forms and the use of different qualifying thresholds at different times, dictates caution in interpreting this information. Only cohorts within each grade should be compared.

TABLE D-4. 328X4 INCUMBENT PERSONAL ATTRIBUTES --
AVERAGE ASVAB SUBSCORES

(Electronic Aptitude)

GRADE	COMPONENT	MEAN SCORE
E1-E3	Active	75.7
	ANG	77.5
	AFRES	76.1
E4	Active	63.2
	ANG	65.1
	AFRES	75.0
E5	Active	61.0
	ANG	57.9
	AFRES	59.8
E6	Active	69.6
	ANG	56.6
	AFRES	62.5
E7	Active	IDA ¹
	ANG	IDA
	AFRES	53.0
Totals	Active	69.8
	ANG	61.4
	AFRES	63.8

¹Insufficient data available.

NOTE: The minimum acceptable score for training in this specialty is 65. Different minimum scores and different test forms have been used earlier.

Civilian Education Completed. Almost all 328X4s finish high school (about 3 percent in the Air Reserve Forces via the General Education Development equivalency certification), whether members of the Active or Reserve Components. Those Avionic Inertial and Radar Navigation Systems Specialists

and Technicians who are members of the Air National Guard are less apt to go on to college than either their Air Force Reserve or Active Air Force counterparts. Over one-half of all active 32874 Master Sergeants have completed some college or university studies. Information on the level of civilian education completed by 328X4 airmen is contained in Table D-5.

TABLE D-5. 328X4 INCUMBENT PERSONAL ATTRIBUTES --
CIVILIAN EDUCATION COMPLETED

(Percentage of Total)

GRADE	COMPONENT	NON-GRADUATE ¹	GED ²	HSDG ³	SOME COLLEGE ⁴
E1-E3	Active	1.1	0	90.9	8.0
	ANG	1.5	4.7	89.1	4.7
	AFRES	8.7	4.3	78.3	8.7
E4	Active	0.9	0	85.2	13.9
	ANG	4.0	5.3	86.7	4.0
	AFRES	5.3	5.3	78.9	10.5
E5	Active	0	0	78.3	21.7
	ANG	1.9	3.2	80.1	14.8
	AFRES	2.1	1.1	84.0	12.8
E6	Active	0	0	62.6	37.4
	ANG	0.6	3.7	80.4	15.3
	AFRES	0	3.8	80.2	16.0
E7	Active	0	0	43.2	56.8
	ANG	0	2.7	81.1	16.2
	AFRES	5.3	5.3	63.1	26.3
Totals		0.7	0	83.0	16.3
		1.6	3.9	82.4	12.1
		2.5	3.2	80.0	14.3

¹Incumbents who have not graduated from high school.

²Incumbents who have completed high school through General Education Development (GED) equivalency.

³Incumbents who are high-school-diploma graduates (HSDG) but have no college work.

⁴Incumbents who have completed at least some college or university work.

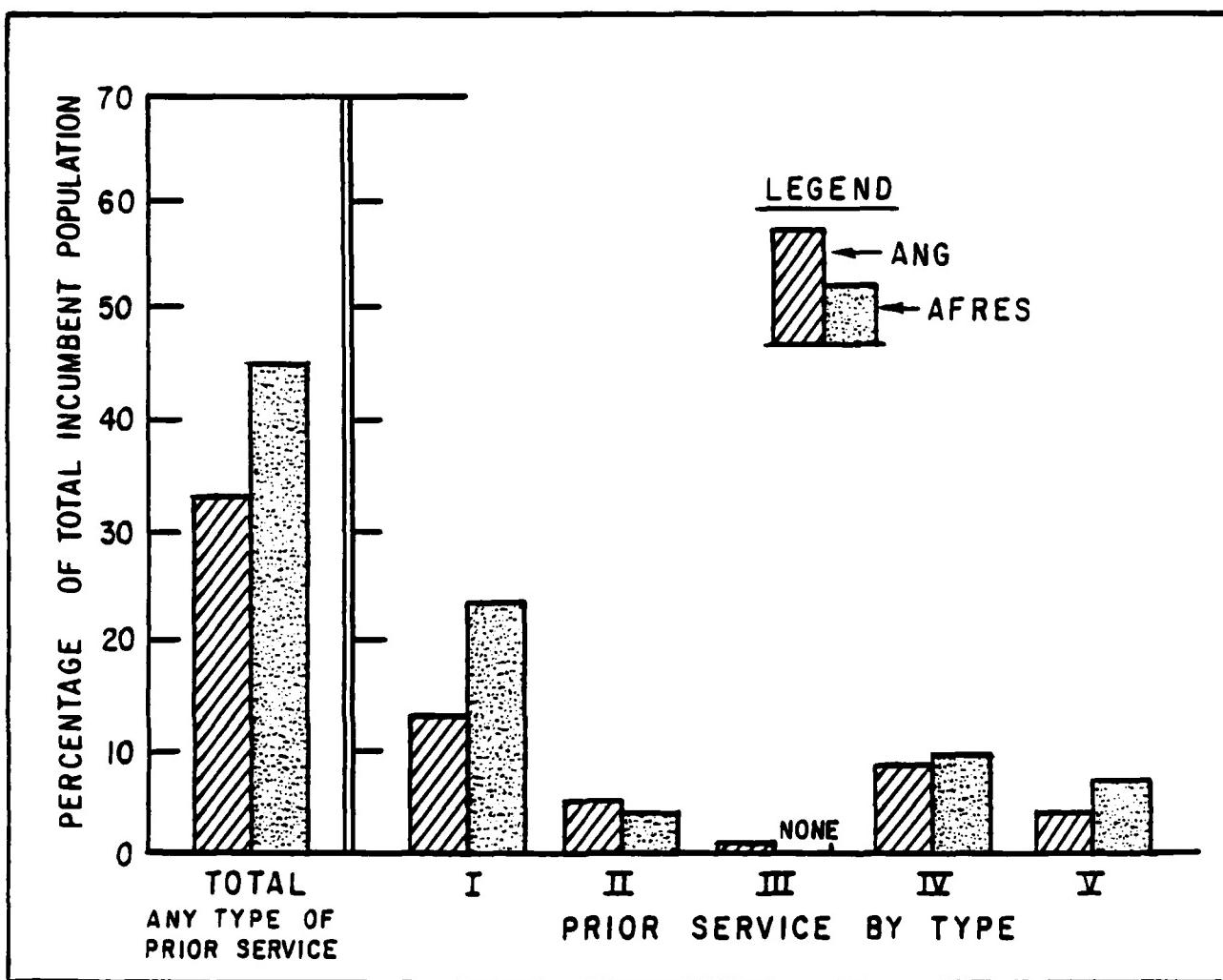
Experience

Prior Military Service.⁷ Of the 328X4 specialists and technicians assigned to the Air Reserve Forces, 44.5 percent of the Air Force Reservists and 33.1 percent of the Air National Guardsmen bring some kind of prior active military experience to their Air Reserve Force jobs. Over one-quarter (27.7 percent) of the Air Force Reservists have had related prior active military service, including 23.8 percent who have served in the Active Air Forces as 328X4s. The Air Guard figures are lower: 19.8 percent of these Air Guardsmen have served earlier in related military skills, including 13.5 percent who have been 328X4s in the Active Air Force at some time prior to their Air Reserve Forces assignment. Figure D-1 contains this information.

Length of Service. Air National Guard 32874s who are Master Sergeants have almost 4 years more time in their total military service than their Active Component counterparts. The meaning of that longevity is difficult to assess due to the lack of any widely accepted factor of conversion between Active and Reserve Component service time. In other grades, the length of total military service is more similar among the three groups reviewed. Curiously, Air Force Reserve E4 and E5 32854s have served at least 1 year less, on the average, than either Air National Guard or Active Air Force airmen in this specialty. Table D-6 shows data on length of total military service.

⁷The prior service data presented in this section have been developed by the Defense Manpower Data Center using the Reserve Component Common Personnel Data System and a cumulative loss file containing all military service separation data since 1971. As publication of this report began, the National Guard Bureau's Air National Guard Support Center and Headquarters, Air Force Reserve were able to compute prior service information on Guardsmen and Reservists based on their own separate data files. That information shows higher levels of prior active service experience among both Air Guardsmen and Air Force Reservists than are discussed in this section. See Appendix I for more information.

FIGURE D-1. 328X4 INCUMBENT EXPERIENCE -- PRIOR ACTIVE MILITARY SERVICE



NOTE: EXPLANATION OF TYPES OF PRIOR SERVICE:

I PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
SAME SPECIALTY.

II PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
NOT IN THE SAME SPECIALTY BUT IN THE SAME CAREER FIELD.

III PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE AND
IN SAME CAREER FIELD.

I - II & III RELATED SERVICE (27.7% AFRES) (19.8% ANG)

IV PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE BUT
NOT IN THE SAME CAREER FIELD.

V PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE BUT
NOT IN SAME CAREER FIELD.

IV & V UNRELATED SERVICE (16.8% AFRES) (13.3 ANG)

TABLE D-6. 328X4 INCUMBENT EXPERIENCE --
LENGTH OF TOTAL MILITARY SERVICE

GRADE	COMPONENT	MEAN LENGTH OF SERVICE (YEARS)
E1-E3	Active	2.6
	ANG	1.6
	AFRES	1.6
E4	Active	4.4
	ANG	4.7
	AFRES	3.4
E5	Active	9.1
	ANG	9.1
	AFRES	7.1
E6	Active	14.9
	ANG	16.0
	AFRES	12.8
E7	Active	18.5
	ANG	22.4
	AFRES	18.5

Time in Grade. Beyond the lowest enlisted grades, Avionic Inertial and Radar Navigation Systems Specialists/Technicians assigned to the Air National Guard are assigned to their present grade longer than either Air Force Reservists or Active Air Force members assigned to the same specialty. The three populations should show generally uneven but similar groupings. Table D-7 contains these data.

Civilian Occupation. A review of current civilian occupations reported by 328X4 incumbents in the Reserve Component shows that 32.6 percent of all Air National Guard personnel assigned to this specialty hold civilian jobs with direct technical application to the military job. The figure for members of the Air Force Reserve is 26.7 percent.

TABLE D-7. 328X4 INCUMBENT EXPERIENCE -- TIME IN GRADE

GRADE	COMPONENT	TIME IN GRADE (YEARS)
E1-E3	Active	1.1
	ANG	0.9
	AFRES	0.7
E4	Active	1.2
	ANG	1.9
	AFRES	0.8
E5	Active	3.0
	ANG	3.3
	AFRES	2.2
E6	Active	2.5
	ANG	5.4
	AFRES	3.7
E7	Active	1.5
	ANG	4.7
	AFRES	2.1

Full-Time Support. Thirty-five percent of all these Reserve Component specialists' positions are occupied by full-time civilian technicians or Active Guard/Reserve airmen. As may be expected, the proportion of 328X4 positions filled by full-time support staff generally rises with enlisted grade. Ninety-five percent of all Reserve Component Technical Sergeant billets in this specialty are so filled. Table D-8 shows this information.

THE TRAINING PROGRAM

All candidates for the 32834 AFSC first attend Basic Military Training of 6 weeks at Lackland Air Force Base, Texas. That training is followed by 23 weeks of technical training at Keesler Air Force Base, Mississippi, after which the 32434 classification occurs. The new Avionic Inertial and Radar Navigation Systems Specialists -- now an Airman First Class, or E3 -- moves to the unit of initial assignment. There, this specialist begins a formal,

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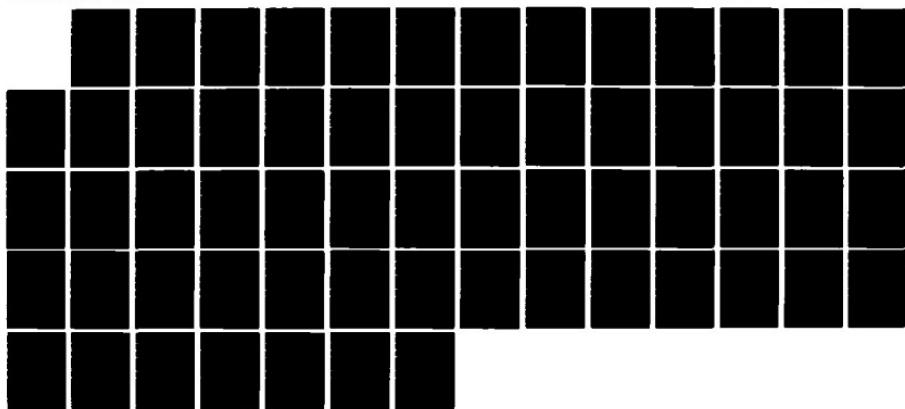
TECHNICAL SKILL TRAINING IN THE RESERVE COMPONENTS OF
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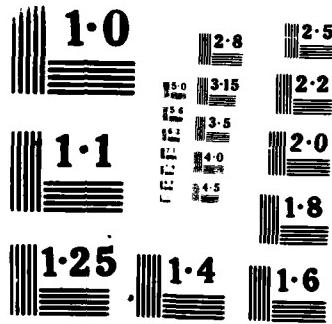
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NATIONAL BUREAU
MICROCOPY RESOLUTION CHART

TABLE D-8. 328X4 FULL-TIME SUPPORT FOR AIR RESERVE FORCES

GRADE	TOTAL AUTHORIZED POSITIONS	FULL-TIME SUPPORT ¹	
		Assigned	Percentage of Authorized Strength
E3	125	4	3
E4	236	15	6
E5	226	81	36
E6	159	151	95
E7	69	34	49
Totals	815	285	35

¹Does not include Active Component advisers or civilian clerical employees of the Department of the Air Force.

technical, on-the-job training program providing upgrade training. This training program will continue throughout the airman's remaining career through the 7 skill level (master) and the E7 or Master Sergeant enlisted grade. No further formal, institutional training is required in this Air Force specialty, whether the incumbent is a member of the active or reserve forces.

The Air Force on-the-job training program provides for supervised specialty development in knowledge ("knowledge training") and in task accomplishment ("qualification training"). For each Air Force specialty, a lengthy Specialty Training Standard (STS) is used throughout on-the-job training. The STS is a document listing requirements for subject knowledge, task knowledge, and task performance. It becomes a part of the airman's file within the unit

of assignment. In advancing from the 3 to 5 skill level in the 328X4 specialty, each airman must:

- Complete satisfactorily a Career Development Course designed for this specialty by the Extension Course Institute of the Air University, Maxwell Air Force Base, Alabama. This course includes a career knowledge examination for which a passing grade must be achieved.
- Demonstrate satisfactory experience (to the supervisor's and commander's satisfaction) in the maintenance and repair work of this specialty.
- Be certified (by the supervisor and commander) as competent to accomplish 5 skill level tasks listed in the 328X4 STS.

A similar set of requirements exists for advancement from the 5 to 7 skill level, with the additional requirement that the experience demonstrated must include supervision of the tasks listed in the STS.

On-the-job training and on-the-job experience have been the sole vehicle used to acquire and sustain this specialist's and technician's skills once institutional apprentice training is successfully completed. While some additional, journeyman- and master-level training courses are made available to the 328X4 under the auspices of the Air Training Command, none of these courses is an AFSC-awarding course. They would provide supplementary training oriented around specific equipment or missions. Members of the Air Reserve Forces attend these mid-career courses (some of which are altered to accommodate the restricted nature of the reserve training environment) as they relate to Air Reserve Forces equipment or missions.

APPENDIX E
AIR FORCE JET ENGINE MECHANIC/TECHNICIAN

SPECIALTY: 426X2 (Air Force Specialty Code (AFSC)).

TITLE: Jet Engine Mechanic/Technician.

PHYSICAL WORK CAPACITY: Standard Light Duty (able to lift 40 pounds).

QUALIFICATIONS FOR AWARD OF AFSC (INITIAL CLASSIFICATION)

3 and 5 Skill Levels

The following general qualifications relate to the award of this AFSC:

- A score of at least 30 in the Mechanical Aptitude area of the Armed Services Vocational Aptitude Battery (ASVAB) (mandatory);
- Knowledge of mechanical principles applying to jet engines (mandatory);
- Knowledge of Air Force centralized and decentralized maintenance concepts and familiarity with Air Force technical publications (mandatory);
- Knowledge of electrical theory (desirable);
- Completion of high school with a course in mechanics or mathematics (desirable);
- Experience in installing, maintaining, and repairing jet engines (mandatory);
- Experience in testing jet engines (desirable);
- Completion of a basic jet engine maintenance course (desirable);
- Normal color vision (mandatory); and
- A physical profile showing moderately good health, with excellent eyesight (mandatory).

7 Skill Level

The following general qualifications relate to the award of this AFSC:

- Qualification as a Jet Engine Mechanic (mandatory);
- Experience in supervising the repair, modification, and testing of jet engines (mandatory);
- Completion of the prescribed seven-level management course¹ (mandatory); and
- Completion of an advanced jet engine maintenance course (desirable).

Additional Specialty Information

In addition to the AFSC itself, the Air Force uses a number of numerical and alphabetical designators to show supplementary or complementary skills, experience, training, or other similar information helpful in the designation of qualifications appropriate to military positions, to airmen themselves, or to both. Some of these designators are used as AFSC prefixes or suffixes, and some are used separately from, but in conjunction with, the AFSC under consideration. Due to the large quantity of these designators, and due to the fact that they are intended to augment and complement, rather than to modify, the normal AFSCs, they are not considered further in this appendix.

THE JOB

General

The Air Force Jet Engine Mechanic or Technician installs, maintains, and repairs jet engines² and supervises that same work in subordinates.

¹This course, taught under Major Command auspices, provides skills appropriate for noncommissioned officers irrespective of AFSC. No technical logistics training is contained in the course.

²Including small gas turbine engines and turbojet missile engines.

At both the apprentice and journeyman levels,³ the work includes diagnostic inspections and preventive maintenance, engine removal and remounting, engine disassembly and reassembly, parts replacement, and metal smoothing, as well as testing (including test-stand operations). The journeyman supervises subordinates, including instructing apprentices in jet engine repair and maintenance. The journeyman also conducts on-the-job training.

As a master,⁴ this specialist's title becomes Jet Engine Technician. In that capacity, the master advises others on technical problems associated with the repair and maintenance of jet engines. In addition to performing unusual maintenance and repair tasks requiring the very highest technical competence, this specialist also supervises maintenance and repair work, establishing production controls and performance standards for subordinates. The technician distributes work, rotates assignments to encourage full qualification of others, and reviews and authenticates their training status. The technician also maintains quality control on work in that supervisor's area of responsibility.

³The Air Force (in Air Force Regulation 35-1) identifies apprentices (3 skill level) as airmen who have basic knowledge within an AFSC but who lack the experience and proficiency to perform most job tasks without supervision. Journeyman (5 skill level), on the other hand, have shown proficiency in their AFSC; they can reasonably be expected to perform on the job without direct supervision.

⁴"Master" in this working note refers to Air Force specialists who have attained the 7 skill level. They are airmen who have "gained a high degree of technical knowledge in their AFSC and . . . have acquired supervisory capability through training and experience." (See paragraphs 1 through 3d, Air Force Regulation 35-1.)

Areas of Assignment

A majority of the Active Air Force (51 percent) and Air Force Reserve⁵ (62 percent) 462X2 positions are part of the field maintenance squadrons which comprise a part of the centralized maintenance scheme characterized principally by the intermediate maintenance organizations of the Strategic Air Command and Military Airlift Command.⁶ Approximately another one-third of Active Air Force Jet Engine Mechanic/Technician billets are assigned to the aircraft generation squadrons (12 percent) and component repair squadrons (20 percent) comprising a major part of the tactical air forces.⁷ decentralized maintenance concept. Almost all (98 percent) of the Air National Guard 426X2 positions and 30 percent of the Air Force Reserve positions are assigned to the consolidated aircraft maintenance squadrons often seen in the Air Reserve Forces. Table E-1 contains this information.

Peacetime versus Wartime

The work experience gained by the 426X2 airman during peacetime is directly applicable to tasks expected in war. While operating tempo will undoubtedly increase, and while the mechanic/technician may face battle damage for the first time, the maintenance routine of testing-diagnosis-disassembly-repair/replacement-reassembly-retesting on the same type of aircraft to which the specialist is assigned during peacetime should continue with very little change.

⁵ In this appendix, several terms are used interchangeably to refer to the Air National Guard and the Air Force Reserve. The Air National Guard may be called the Air Guard or ANG. The acronym is used in tables and figures. Similarly, the Air Force Reserve is referred to as AFRES in tables and figures. Together, these two elements comprise the Air Reserve Forces, or ARF, the Guard/Reserve, or the Reserve Component.

⁶ Air Training Command and Air Force Systems Command also follow the centralized maintenance concept involving Field Maintenance Squadrons.

⁷ Alaskan Air Command, Pacific Air Forces, Tactical Air Command, and U.S. Air Forces, Europe.

**TABLE E-1. DISTRIBUTION OF 426X2 POSITIONS
AMONG MAJOR AIR FORCE FUNCTIONS**

KINDS OF UNITS	DISTRIBUTION ¹			
	Active Spaces	ANG Spaces	AFRES Spaces	RC ² Dependence (Percent)
Aircraft generation, providing a broad range of on-aircraft maintenance (AF Kind Code AIG)	938	None	None	0
Consolidated maintenance, including both on- and off-aircraft maintenance (AF Kind Code CLM)	237	1,618	485	90
Combat logistics support, providing logistics assistance (including evacuation) in the combat zone (AF Kind Code CLS)	99	None	75	43
Component repair, providing off-aircraft repair of equipment and components (AF Kind Code COR)	1,556	None	None	0
Field maintenance, emphasizing on- and off-aircraft diagnostic and repair work on subsystems and equipment (AF Kind Code FDM)	4,143	None	994	19
The Centralized Intermediate Repair Facility of the U.S. Pacific Air Force at Kadena Air Force Base (AF Kind Code LGT)	124	None	None	0
Other missions and functions	1,016	26	49	7
Totals	8,113	1,644	1,603	29

¹Distribution is shown according to Air Force (AF) Kind Code. The Kind Code is a broad representation of unit groupings according to the "title" or "kind" of unit involved. To the extent that the unit title describes the unit mission or function, the Kind Code represents that mission or function also.

²Reserve Component.

NOTE: The term "spaces" denotes positions.

Implications of Force Modernization

Continuous upgrade and modernization of jet aircraft engines have been the rule for several decades in the Air Force. The 426X2 mechanic and technician assigned to the Air Reserve Forces face an inevitable series of system refinements and upgrades as aircraft engines are improved. The Air Force's system of Field Training Detachments (see Appendix H for more information) was originally established to provide training to meet the maintenance challenges of conversion to new systems and subsystems. As these changes are anticipated, courses are routinely established by Field Training Detachments concentrating on that type of system. These Field Training Detachment courses are made available to Air Reserve Forces personnel as well as to Active Air Force people.

Career Progression/Merging

Normal skill and career progression for the Jet Engine Mechanic/Technician is made up of the sequential steps listed in Table E-2.

TABLE E-2. CAREER AND SKILL PROGRESSION FOR THE 426X2

EVENT	SKILL LEVEL/ AFSC	ENLISTED GRADE	TITLE
Technical Training Graduation and Classification	3 (apprentice)/ 42632	E3 (Airman First Class)	Mechanic
Upgrade Reclassifi- cation	5 (journeyman)/ 42652	E4 (Senior Airman) E4 (Sergeant) E5 (Staff Sergeant)	Mechanic Mechanic Mechanic
Upgrade Reclassifi- cation	7 (master)/ 42672	E6 (Technical Sergeant) E7 (Master Sergeant)	Technician Technician

THE INCUMBENT POPULATION

Personal Attributes

Age. Air Reserve Forces 426X2s are older than their Active Component counterparts when compared grade-by-grade. Table E-3 shows the specific relationships within this specialty.

TABLE E-3. 426X2 INCUMBENT PERSONAL ATTRIBUTES -- AVERAGE AGE

GRADE	COMPONENT	MEAN AGE (YEARS)
E1-E3	Active	21.7
	ANG	22.7
	AFRES	22.8
E4	Active	24.4
	ANG	26.7
	AFRES	26.7
E5	Active	28.7
	ANG	32.3
	AFRES	30.9
E6	Active	34.1
	ANG	38.9
	AFRES	37.1
E7	Active	37.6
	ANG	44.7
	AFRES	42.2

Aptitude Area Scores. A grade-by-grade comparison of Mechanical Aptitude subtest scores for Jet Engine Mechanics and Technicians gives uneven results. The data displayed in Table E-4 are raw test scores. This fact, coupled with the evolutionary changes to the ASVAB test forms and the use of different qualifying thresholds at different times, dictates caution in interpreting this information. Only cohorts within each grade should be compared.

TABLE E-4. 426X2 INCUMBENT PERSONAL ATTRIBUTES --
AVERAGE ASVAB SUBSCORES

(Mechanical Aptitude)

GRADE	COMPONENT	MEAN SCORE
E1-E3	Active	56.0
	ANG	58.8
	AFRES	52.6
E4	Active	43.3
	ANG	48.8
	AFRES	53.3
E5	Active	45.9
	ANG	53.1
	AFRES	50.2
E6	Active	60.7
	ANG	60.1
	AFRES	51.1
E7	Active	DUR ¹
	ANG	77.5
	AFRES	58.6
Totals	Active	DUR
	ANG	57.1
	AFRES	51.9

¹Data under review.

NOTE: The minimum acceptable score for training in this specialty is 30.

Civilian Education Completed. The Air Force, in both its Active and Reserve Components, generally enlists high school graduates for training and service as 426X2 specialists. The Air Reserve Forces do show appreciably larger groups of 426X2s who have achieved high school graduation through the award of the General Education Development equivalency certificate than does the Active Air Force, but beyond that dissimilarity, these specialists, whether grouped by rank or totaled together, are quite similar in civilian education development. Table E-5 contains these comparisons.

TABLE E-5. 426X2 INCUMBENT PERSONAL ATTRIBUTES --
CIVILIAN EDUCATION COMPLETED

(Percentage of Total)

GRADE	COMPONENT	NON-GRADUATE ¹	GED ²	HSDG ³	SOME COLLEGE ⁴
E1-E3	Active	0.5	0	97.4	2.1
	ANG	5.7	10.2	79.6	4.5
	AFRES	1.6	11.3	85.5	1.6
E4	Active	1.0	0	96.7	2.3
	ANG	3.1	6.6	84.8	5.5
	AFRES	2.0	8.6	83.4	6.0
E5	Active	0.7	0	94.5	4.8
	ANG	1.4	7.1	86.5	5.0
	AFRES	1.9	6.7	83.9	7.5
E6	Active	0.6	0	89.4	10.0
	ANG	1.2	7.1	83.3	8.4
	AFRES	2.0	6.1	81.3	10.6
E7	Active	0.7	0	85.0	14.3
	ANG	3.1	7.8	83.6	5.5
	AFRES	3.4	9.1	81.8	5.7
Totals		0.7	0	95.0	4.3
		ANG	7.4	84.5	6.2
		AFRES	7.8	83.2	7.0

¹Incumbents who have not graduated from high school.

²Incumbents who have completed high school through General Education Development (GED) equivalency.

³Incumbents who are high-school-diploma graduates (HSDG) but have no college work.

⁴Incumbents who have completed at least some college or university work.

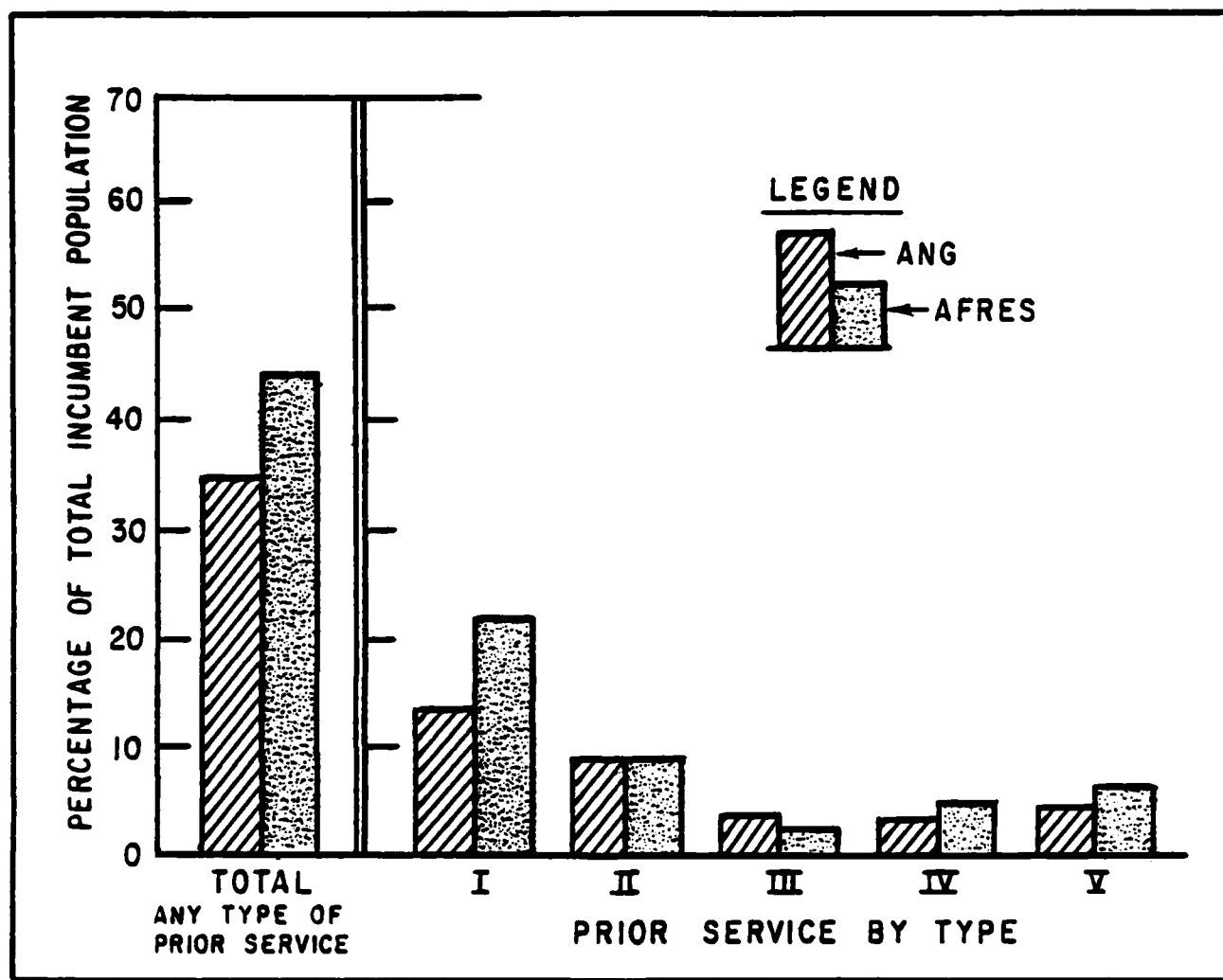
Experience

Prior Military Service.⁸ Of those Jet Engine Mechanics and Technicians serving in the Air Reserve Forces, over one-third have some extended active duty military experience. Over 21 percent of Air Force Reservists have served on active duty in the same Air Force Specialty, while over 13 percent of Air National Guard 426X2s bring active duty experience in the same specialty to their Air Reserve Forces job. A higher percentage (33.2 percent for Reservists and 26.1 percent for Guardsmen) of these airmen have had related service experience. Figure E-1 shows the levels and types of prior active military experience of Air National Guard and Air Force Reserve Jet Engine Mechanics/Technicians.

Length of Service. Beyond the lowest enlisted grades, Jet Engine Mechanics and Technicians assigned to the Air National Guard show a greater length of total military service than do 426X2s of the Air Force Reserve or the Active Air Force. The overall impression created by these data, however, is one of similarity of populations. Table E-6 contains information on length of total service in this specialty.

⁸The prior service data presented in this section have been developed by the Defense Manpower Data Center using the Reserve Component Common Personnel Data System and a cumulative loss file containing all military service separation data since 1971. As publication of this report began, the National Guard Bureau's Air National Guard Support Center and Headquarters, Air Force Reserve were able to compute prior service information on Guardsmen and Reservists based on their own separate data files. That information shows higher levels of prior active service experience among both Air Guardsmen and Air Force Reservists than are discussed in this section. See Appendix I for more information.

FIGURE E-1. 426X2 INCUMBENT EXPERIENCE -- PRIOR ACTIVE MILITARY SERVICE



NOTE: EXPLANATION OF TYPES OF PRIOR SERVICE:

I PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
SAME SPECIALTY.

II PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
NOT IN THE SAME SPECIALTY BUT IN THE SAME CAREER FIELD.

III PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE AND
IN SAME CAREER FIELD.

I - II & III RELATED SERVICE (33.2% AFRES) (26.1% ANG)

IV PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE BUT
NOT IN THE SAME CAREER FIELD.

V PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE BUT
NOT IN SAME CAREER FIELD.

IV & V UNRELATED SERVICE (10.0% AFRES) (7.6 % ANG)

**TABLE E-6. 426X2 INCUMBENT EXPERIENCE --
LENGTH OF TOTAL MILITARY SERVICE**

GRADE	COMPONENT	MEAN LENGTH OF SERVICE (YEARS)
E1-E3	Active	2.5
	ANG	1.6
	AFRES	1.1
E4	Active	4.9
	ANG	5.2
	AFRES	4.1
E5	Active	9.1
	ANG	9.6
	AFRES	8.0
E6	Active	14.9
	ANG	16.5
	AFRES	14.2
E7	Active	18.3
	ANG	24.3
	AFRES	19.7

Time in Grade. Members of the Air Reserve Forces who are 426X2s tend to serve in their enlisted grade for a longer period of time once they pass the E5, Staff Sergeant, grade. The overall data, however, are comparable. Table E-7 contains this information.

Civilian Occupation. A review of current civilian occupations reported by 426X2 incumbents in the Reserve Component shows that 50.9 percent of all Air National Guard personnel assigned to this specialty hold civilian jobs with direct technical application to the military job. The figure for members of the Air Force Reserve is 34.2 percent.

TABLE E-7. 426X2 INCUMBENT EXPERIENCE -- TIME IN GRADE

GRADE	COMPONENT	TIME IN GRADE (YEARS)
E1-E3	Active	1.0
	ANG	0.7
	AFRES	0.8
E4	Active	1.6
	ANG	1.7
	AFRES	1.1
E5	Active	2.9
	ANG	3.3
	AFRES	1.9
E6	Active	2.6
	ANG	4.8
	AFRES	4.0
E7	Active	1.9
	ANG	5.5
	AFRES	3.1

Full-Time Support. One-third of all 426X2 positions in the Air Reserve Forces are filled by full-time civilian technicians or Active Guard/Reserve enlisted persons. Fully 91 percent of all Technical Sergeants in the Air Reserve Forces are full-time support personnel. These data are displayed in Table E-8.

TABLE E-8. 426X2 FULL-TIME SUPPORT FOR AIR RESERVE FORCES

GRADE	TOTAL AUTHORIZED POSITIONS	FULL-TIME SUPPORT ¹	
		Assigned	Percentage of Authorized Strength
E3	296	10	3
E4	1,257	70	6
E5	887	337	38
E6	515	505	91
E7	292	132	45
Totals	3,247	1,054	33

¹Does not include Active Component advisers or civilian clerical employees of the Department of the Air Force.

THE TRAINING PROGRAM

After completion of Basic Military Training of 6 weeks at Lackland Air Force Base, Texas, all airmen destined to become 42632 Jet Engine Mechanics attend a technical training course at Chanute Air Force Base, Illinois for 8 weeks and 2 days. The new 42632 airman emerges as an E3 (Airman First Class) and moves to the unit of initial assignment. There, this specialist begins a formal, technical, on-the-job training program providing upgrade training. This training program will continue throughout the airman's remaining career through the 7 skill level (master) and the E7 or Master Sergeant enlisted grade. No further formal, institutional training is required in this Air Force specialty, whether the incumbent is a member of the active or reserve forces.

The Air Force on-the-job training program provides for supervised specialty development in knowledge ("knowledge training") and in task accomplishment ("qualification training"). For each Air Force specialty, a lengthy Specialty Training Standard (STS) is used throughout on-the-job training. The STS is a document listing requirements for subject knowledge, task knowledge, and task performance. It becomes a part of the airman's file within the unit of assignment. In advancing from the 3 to 5 skill level in the 426X2 specialty, each airman must:

- Complete satisfactorily a Career Development Course designed for this specialty by the Extension Course Institute of the Air University, Maxwell Air Force Base, Alabama. This course includes a career knowledge examination for which a passing grade must be achieved.
- Demonstrate satisfactory experience (to the supervisor's and commander's satisfaction) in testing, maintaining, and repairing turbojet engines and equipment.
- Be certified (by the supervisor and commander) as competent to accomplish 5 skill level tasks listed in the 426X2 STS.

A similar set of requirements exists for advancement from the 5 to 7 skill level, with the additional requirement that the experience demonstrated must include supervision of the testing, maintaining, and repairing of turbojet engines and equipment.

On-the-job training and on-the-job experience have been the sole vehicle used to acquire and sustain this specialist's and technician's skills once institutional apprentice training is successfully completed. While over 20 additional, journeyman- and master-level training courses are available to the 426X2 under the auspices of the Air Training Command, none of these courses is an AFSC-awarding course. They all provide supplementary training oriented around specific equipment or missions. Some of the courses result in the award of a Special Experience Identifier (after additional field experience) and some do not. Members of the Air Reserve Forces are offered these courses (some of which are altered to accommodate the restricted nature of the reserve training environment) as they relate to Air Reserve Forces equipment or missions.

APPENDIX F

AIR FORCE MACHINIST/MACHINE SHOP TECHNICIAN

SPECIALTY: 427X0 (Air Force Specialty Code (AFSC)).

TITLE: Machinist/Machine Shop Technician.

PHYSICAL WORK CAPACITY: Standard Light Duty (able to lift 40 pounds).

QUALIFICATION FOR AWARD OF AFSC (INITIAL CLASSIFICATION)

3 and 5 Skill Levels

The following general qualifications relate to the award of this AFSC:

- A score of at least 35 in the Mechanical Aptitude area of the Armed Service Vocational Aptitude Battery (ASVAB) (mandatory);
- Knowledge (mandatory) of:
 - Metal parts repair and fabrication processes,
 - Characteristics and composition of machinable materials, and
 - mechanical drawings;
- Satisfactory use (mandatory) of:
 - Precision measuring tools,
 - Metal processing machines and tools, and
 - Charts, tables, and shop safety codes and practices;
- Knowledge of maintenance and supply publications and of techniques of tool and die design (desirable);
- Completion of high school with courses in shop, mathematics, metalworking, or mechanical drawing (desirable);
- Experience in boring, shaping, milling, and grinding metal to fine tolerances, and in using precision measuring devices (mandatory);

- Completion of a basic machinist course (desirable); and
- A physical profile showing moderately good health, with excellent eyesight (mandatory).

7 Skill Level

The following general qualifications relate to the award of this AFSC:

- Knowledge (desirable) of shop management, including:
 - Man-hour and material-requirement estimation, and
 - Production control principles;
- Qualification as a Machinist (mandatory);
- Experience in supervising the design of tools, dies, or gauges, or the production of fabricated metal parts (held to close tolerances) (mandatory); and
- Completion of the prescribed seven-level management course¹ (mandatory).

Additional Specialty Information

In addition to the AFSC itself, the Air Force uses a number of numerical and alphabetical designators to show supplementary or complementary skills, experience, training, or other similar information helpful in the designation of qualifications appropriate to military positions, to airmen themselves, or to both. Some of these designators are used as AFSC prefixes or suffixes, and some are used separately from, but in conjunction with, the AFSC under consideration. Due to the large quantity of these designators, and due to the fact that they are intended to augment and complement, rather than to modify, the normal AFSCs, they are not considered further in this appendix.

¹This course, taught under Major Command auspices, provides skills appropriate for noncommissioned officers irrespective of AFSC. No technical logistics training is contained in the course.

THE JOB

General

The Air Force Machinist or Machine Shop Technician makes, repairs, and modifies parts using a variety of tools. This specialist also supervises others who do this type of work and supervises machine shop operations.

At both the apprentice and journeyman levels,² the work of this specialist involves problem diagnosis and determination of the work to be done, followed by material selection and tool preparation. Finally, the material or stock is bored, reamed, smoothed, shaped, ground, faced, tapered, cut, or otherwise changed into the part desired. The work may also involve forced removal of damaged parts, pressed reassembly (such as with bushings or bearings), and careful measurement or clearance determination. Maintenance of hand and machine tools is included.

As a journeyman, the machinist supervises machine shop workers who are less skilled by assigning work, evaluating performance, and demonstrating the use of tools and equipment. Participation in, and supervision of, on-the-job training are included.

As a master,³ this specialists' title becomes Machine Shop Technician. Duties require giving advice on metals machining, design and production problems, as well as an even higher degree of expert task accomplishment.

²The Air Force (in Air Force Regulation 35-1) identifies apprentices (3 skill level) as airmen who have basic knowledge within an AFSC but who lack the experience and proficiency to perform most job tasks without supervision. Journeymen (5 skill level), on the other hand, have shown proficiency in their AFSC; they can reasonably be expected to perform on the job without direct supervision.

³"Master" in this working note refers to Air Force specialists who have attained the 7 skill level. They are airmen who have "gained a high degree of technical knowledge in their AFSC and . . . have acquired supervisory capability through training and experience." (See paragraphs 1 through 3d, Air Force Regulation 35-1.)

personally than that demanded of journeymen. This airman is also required to supervise technically an array of more extensive and complex machine shop activities than was the journeyman. The master also manages work flow, production, and quality control for a group of subordinates and supervises on-the-job training.

Areas of Assignment

Almost one-half (49 percent) of Air Force Reservist 427X0s are assigned to the systems-oriented field maintenance squadrons typically found operating under the Air Force's centralized maintenance concept typical of the Strategic Air Command and the Military Airlift Command.⁴ The largest single group (42 percent) of Active Air Force 427X0s is also assigned to field maintenance squadrons. Another large group (49 percent) of Air Force Reservist machinists and machine shop technicians are assigned to consolidated aircraft maintenance squadrons (CAMS) characteristic of the Air National Guard⁵ and Air Force Reserve. Almost all (98 percent) of the Air National Guard 427X0s are assigned to CAMS. The second largest group (38 percent) of these Active Air Force specialists are found performing the off-aircraft, decentralized maintenance of the equipment maintenance squadrons typical of the tactical air forces⁶ of the United States. Table F-1 contains information on the distribution of 427X0s throughout both components of the Air Force.

⁴This maintenance concept, formulated broadly in Air Force Regulation 66-1, is also used by the shops and flightlines of the Air Force Systems Command and the Air Training Command.

⁵In this appendix, several terms are used interchangeably to refer to the Air National Guard and the Air Force Reserve. The Air National Guard may be called the Air Guard or ANG. The acronym is used in tables and figures. Similarly, the Air Force Reserve is referred to as AFRES in tables and figures. Together, these two elements comprise the Air Reserve Forces, or ARF, the Guard/Reserve, or the Reserve Component.

⁶Alaskan Air Command, Pacific Air Forces, Tactical Air Command, and U.S. Air Forces, Europe.

**TABLE F-1. DISTRIBUTION OF 427X0 POSITIONS
AMONG MAJOR AIR FORCE FUNCTIONS**

KINDS OF UNITS	DISTRIBUTION ¹			
	Active Spaces	ANG Spaces	AFRES Spaces	RC ² Dependence (Percent)
Consolidated maintenance, including both on- and off-aircraft maintenance (AF Kind Code CLM)	23	204	68	92
Component repair, providing off-aircraft repair of equipment and components (AF Kind Code COR)	29	None	None	0
Equipment maintenance, providing extensive off-aircraft repair of support equipment and selected components, as well as intricate and complex on-aircraft repair work (AF Kind Code EQM)	292	None	None	0
Field maintenance, emphasizing on- and off-aircraft diagnostic and repair work on subsystems and equipment (AF Kind Code FDM)	323	None	68	17
Other missions and functions	112	5	4	7
Totals	779	209	140	31

¹Distribution is shown according to Air Force (AF) Kind Code. The Kind Code is a broad representation of unit groupings according to the "title" or "kind" of unit involved. To the extent that the unit title describes the unit mission or function, the Kind Code represents that mission or function also.

²Reserve Component.

NOTE: The term "spaces" denotes positions.

Peacetime versus Wartime

The work of the Air Force Machinist and Machine Shop Technician under wartime conditions is essentially the same work that specialist performs in peacetime. Operating tempo, physical security of machine shops which are displaced to forward positions, fluctuations in power supply, and other

facility problems all will have some impact on the machinists/technicians work. But the technical aspects of the work, the job which the specialist has been trained to perform, should vary little from the work practiced in peacetime. This specialist provides basic, foundational support for other specialties performing field and equipment maintenance in the shops of the Air Force, and that support requirement should not change under wartime conditions.

Implications of Force Modernization

Of all the skills chosen for review in this study, the 427X0 specialty is affected the least by force modernization. This is due to the fundamental nature of the work, which is fabrication. To be sure, new structural, raw materials require different basic machining techniques, but the impact of such changes should seldom occur.

Career Progression/Merging

Normal career and skill progression for the 427X0 Machinist/Machine Shop Technician is made up of the sequential steps listed in Table F-2.

TABLE F-2. CAREER AND SKILL PROGRESSION FOR THE 427X0

EVENT	SKILL LEVEL/ AFSC	ENLISTED GRADE	TITLE
Technical Training Graduation and Classification	3 (apprentice)/ 42730	E3 (Airman First Class)	Machinist
Upgrade Reclassifi- cation	5 (journeyman)/ 42750	E4 (Senior Airman) E4 (Sergeant) E5 (Staff Sergeant)	Machinist Machinist Machinist
Upgrade Reclassifi- cation	7 (master) 42770	E6 (Technical Sergeant) E7 (Master Sergeant)	Technician Technician

No merging or combination of career ladders involving this specialty occurs until grade E8 (Senior Master Sergeant), 42799, "Fabrication Superintendent." Further consideration of this manager/supervisor level of development is beyond the scope of this study.

THE INCUMBENT POPULATION

Personal Attributes

Age. The machinists and machine shop technicians of the Air Reserve Forces are older at every grade level than their Active Air Force counterparts. Table F-3 contains these data.

TABLE F-3. 427X0 INCUMBENT PERSONAL ATTRIBUTES -- AVERAGE AGE

GRADE	COMPONENT	MEAN AGE (YEARS)
E1-E3	Active	21.6
	ANG	25.4
	AFRES	IDA ¹
E4	Active	25.1
	ANG	26.5
	AFRES	29.3
E5	Active	29.2
	ANG	35.3
	AFRES	32.8
E6	Active	34.6
	ANG	40.7
	AFRES	39.3
E7	Active	37.2
	ANG	49.2
	AFRES	45.0

¹ Insufficient data available.

Aptitude Area Scores. The relationship among Mechanical Aptitude subtest scores compared across components on a grade-by-grade basis is uneven. The data displayed in Table F-4 are raw test scores. This fact, coupled with the evolutionary changes in the ASVAB test forms and the use of different

qualifying thresholds at different times, dictates caution in interpretation of this information. Only cohorts within each grade should be compared.

TABLE F-4. 427X0 INCUMBENT PERSONAL ATTRIBUTES --
AVERAGE ASVAB SUBSCORES

(Mechanical Aptitude)

GRADE	COMPONENT	MEAN SCORE
E1-E3	Active	66.6
	ANG	51.8
	AFRES	IDA ¹
E4	Active	45.0
	ANG	48.3
	AFRES	49.7
E5	Active	50.3
	ANG	66.5
	AFRES	63.3
E6	Active	53.3
	ANG	DUR ²
	AFRES	54.1
E7	Active	IDA
	ANG	IDA
	AFRES	IDA
Totals		56.6
		49.4
		56.6

¹Insufficient data available.

²Data under review.

NOTE: The minimum acceptable score for training in this specialty is currently 35. Different minimum scores and different test forms have been used earlier.

Civilian Education Completed. The Air Force generally accepts only high school graduates for training and service as 427X0 specialists. Active Air Force 427X0 incumbents who have not graduated from high school constitute only 1 percent of the total population, while the comparable figures for Air National Guard and Air Force Reserve incumbents lie between 2 and

3 percent. The Air National Guard and the Air Force Reserve accept appreciably larger fractions of their 427X0 specialist populations from men and women who have achieved high school graduation by means of the General Education Development equivalency certificate. The proportions are 6.5 percent for the Air National Guard and 11.0 percent for the Air Force Reserve. Table F-5 contains information on civilian education.

TABLE F-5. 427X0 INCUMBENT PERSONAL ATTRIBUTES --
CIVILIAN EDUCATION COMPLETED

(Percentage of Total)

GRADE	COMPONENT	NON-GRADUATE ¹	GED ²	HSDG ³	SOME COLLEGE ⁴
E1-E3	Active	0.3	0	96.4	3.3
	ANG	0	0	92.9	7.1
	AFRES	0	11.1	88.9	0
E4	Active	1.9	0	94.9	3.2
	ANG	0	2.2	95.6	2.2
	AFRES	5.0	10.0	85.0	0
E5	Active	2.3	0	95.4	2.3
	ANG	1.5	9.0	86.5	3.0
	AFRES	0	15.8	77.2	7.0
E6	Active	0	0	88.1	11.9
	ANG	3.1	8.4	78.1	10.4
	AFRES	1.5	6.3	82.8	9.4
E7	Active	0	0	85.7	14.3
	ANG	12.5	4.2	75.0	8.3
	AFRES	15.4	15.4	61.5	7.7
Totals		1.0	0	94.2	4.8
		2.8	6.5	84.2	6.7
		2.5	11.0	79.8	6.7

¹Incumbents who have not graduated from high school.

²Incumbents who have completed high school through General Education Development (GED) equivalency.

³Incumbents who are high-school-diploma graduates (HSDG) but have no college work.

⁴Incumbents who have completed at least some college or university work.

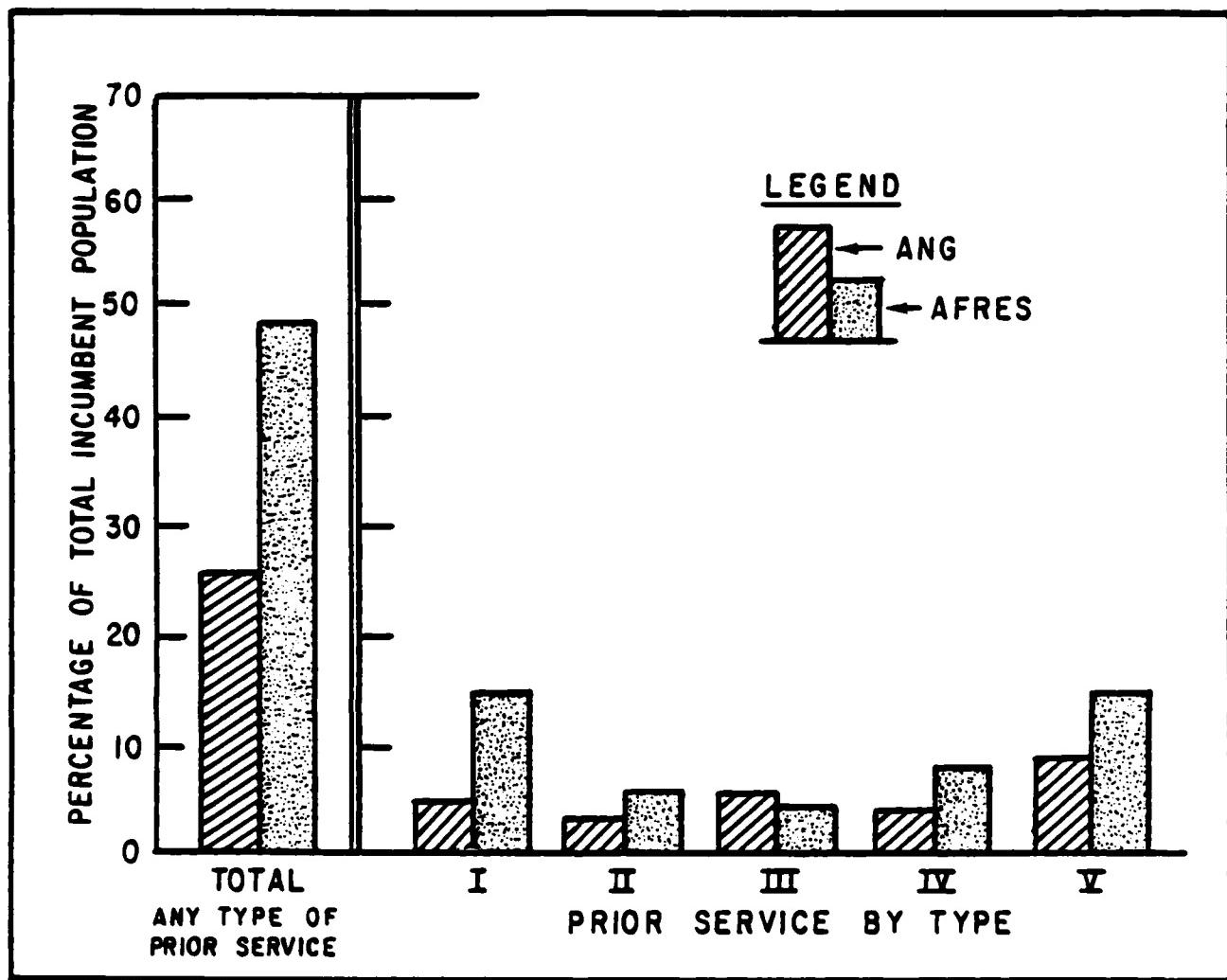
Experience

Prior Military Service.⁷ Almost one-half (47.9 percent) of Air Force Reserve Machinists and Machine Shop Technicians have had prior active military service of some kind. The comparable figure for Air National Guardsmen is 26 percent. Over 25 percent of the Air Force Reservists and 13 percent of the Air National Guardsmen have had related prior service (see Figure F-1), while about 15 percent and 5 percent, respectively, of Air Force Reserve and Air National Guard 427XOs have actually served in that same AFSC while on prior extended active duty. Figure F-1 shows this information graphically.

Length of Service. A grade-by-grade comparison of length of total military service shows a series of uneven relationships and an interesting situation at the Master Sergeant (E7) level, where the mean Air National Guard length of total military service exceeds Active Air Force length of service by over 10 years. Table F-6 contains these comparisons.

⁷The prior service data presented in this section have been developed by the Defense Manpower Data Center using the Reserve Component Common Personnel Data System and a cumulative loss file containing all military service separation data since 1971. As publication of this report began, the National Guard Bureau's Air National Guard Support Center and Headquarters, Air Force Reserve were able to compute prior service information on Guardsmen and Reservists based on their own separate data files. That information shows higher levels of prior active service experience among both Air Guardsmen and Air Force Reservists than are discussed in this section. See Appendix I for more information.

FIGURE F-1. 427X0 INCUMBENT EXPERIENCE -- PRIOR ACTIVE MILITARY SERVICE



NOTE: EXPLANATION OF TYPES OF PRIOR SERVICE:

I PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
SAME SPECIALTY.

II PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
NOT IN THE SAME SPECIALTY BUT IN THE SAME CAREER FIELD.

III PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE AND
IN SAME CAREER FIELD.

I - II & III RELATED SERVICE (25.2% AFRES) (13.0% ANG)

IV PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE BUT
NOT IN THE SAME CAREER FIELD.

V PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE BUT
NOT IN SAME CAREER FIELD.

IV & V UNRELATED SERVICE (22.7% AFRES) (13.0% ANG)

TABLE F-6. 427X0 INCUMBENT EXPERIENCE --
LENGTH OF TOTAL MILITARY SERVICE

GRADE	COMPONENT	MEAN LENGTH OF SERVICE (YEARS)
E1-E3	Active	1.7
	ANG	3.1
	AFRES	IDA ¹
E4	Active	5.5
	ANG	5.3
	AFRES	6.5
E5	ANG	10.6
	AFRES	8.3
	Active	15.0
E6	ANG	17.2
	AFRES	15.4
	Active	17.7
E7	ANG	28.2
	AFRES	20.3

¹Insufficient data available.

Time in Grade. In the upper two enlisted grades studied, E6 and E7, Air Reserve Force 427X0s have spent measurably longer periods of time in their present grade than their Active Air Force counterparts. Table F-7 displays this information on a grade-by-grade basis.

Civilian Occupation. A review of current civilian occupations reported by 427X0 incumbents in the Reserve Component shows that 60.2 percent of all Air National Guard personnel assigned to this specialty hold civilian jobs with direct technical application to the military job. The figure for members of the Air Force Reserve is 42.6 percent.

TABLE F-7. 427X0 INCUMBENT EXPERIENCE -- TIME IN GRADE

GRADE	COMPONENT	TIME IN GRADE (YEARS)
E1-E3	Active	0.5
	ANG	1.4
	AFRES	IDA ¹
E4	Active	2.2
	ANG	2.1
	AFRES	1.9
E5	Active	3.1
	ANG	3.8
	AFRES	1.6
E6	Active	2.6
	ANG	6.0
	AFRES	5.1
E7	Active	1.6
	ANG	5.1
	AFRES	3.5

¹Insufficient data available.

Full-Time Support. Within the Air National Guard and the Air Force Reserve, civilian technicians and Active Guard/Reserve airmen serving full time in this specialty account for 34 percent of all 427X0 positions in the Selected Reserve. As might be expected, the proportion of these positions occupied by full-time support personnel rises with the level of enlisted grade. With very few exceptions, these support people are required to mobilize and deploy with the units in which they now serve.

The degree of compatibility between the specific, full-time job of the Air Reserve Technician and his military AFSC assignment in the Air Force Reserve unit is very high, since each civilian work position is designed with the military AFSC and unit vacancy as the starting point. In the Air National Guard the compatibility of the civilian job and military assignment is

somewhat less specific for full-time technicians, but civilian work assignments for these technicians do fall generally within the same career field as the AFSC of their military billet.

Table F-8 contains specific information on full-time support staff.

TABLE F-8. 427X0 FULL-TIME SUPPORT FOR AIR RESERVE FORCES

GRADE	TOTAL AUTHORIZED POSITIONS	FULL-TIME SUPPORT ¹	
		Assigned	Percentage of Authorized Strength
E3	21	2	10
E4	118	4	3
E5	81	16	20
E6	120	73	61
E7	9	23	256
Totals	349	118	34

¹ Does not include Active Component advisers or civilian clerical employees of the Department of the Air Force.

THE TRAINING PROGRAM

After completion of Basic Military Training of 6 weeks at Lackland Air Force Base, Texas, the airman (whether in the Active or Reserve Component) destined to become an Air Force machinist enters a technical training course of 16 weeks at the Army's Ordnance School and Center at Aberdeen Proving Ground, Maryland.⁸ Upon successful completion of this training, the airman (by now an E3 or Airman First Class) is classified by the Air Force as a

⁸ This is, of course, only one example of one Military Service providing technical military training for another's personnel. The 16-week machinist course for Air Force personnel at Aberdeen Proving Ground, Maryland has approximately the same length (and same content) as that used to prepare Army apprentice machinists.

42730 and moves to the unit of initial assignment. There, this specialist begins a formal, technical, on-the-job training program providing upgrade training. This training program will continue throughout the airman's remaining career through the 7 skill level (master) and the E7 or Master Sergeant enlisted grade. No further formal, institutional training is required in this Air Force specialty, whether the incumbent is a member of the active or reserve forces.

The Air Force on-the-job training program provides for supervised specialty development in knowledge ("knowledge training") and in task accomplishment ("qualification training"). For each Air Force specialty, a lengthy Specialty Training Standard (STS) is used throughout on-the-job training. The STS is a document listing requirements for subject knowledge, task knowledge, and task performance. It becomes a part of the airman's file within the unit of assignment. In advancing from the 3 to 5 skill level in the 427X0 specialty, each airman must:

- Complete satisfactorily a Career Development Course designed for this specialty by the Extension Course Institute of the Air University, Maxwell Air Force Base, Alabama. This course includes a career knowledge examination for which a passing grade must be achieved.
- Demonstrate satisfactory experience (to the supervisor's and commander's satisfaction) in machine (and other) tool operation and maintenance; tool design; work with machined parts; familiarization with properties of metals; and fabrication of special tools, dies, and jigs.
- Be certified (by the supervisor and commander) as competent to accomplish 5 skill level tasks listed in the 427X0 STS.

A similar set of requirements exists for advancement from the 5 to 7 skill level, with the additional requirement that the experience demonstrated must include supervision of the tasks listed above.

On-the-job training and on-the-job experience have been the sole vehicle used to acquire and sustain this specialist's and technician's skills once

institutional apprentice training is successfully completed. While one additional, journeyman-level training course is available to the 42750 under the auspices of the Air Training Command (but conducted by the Army at Aberdeen Proving Ground, Maryland), this course is not an AFSC-awarding course. It provides supplementary training in advanced technical work. The course length is 6 weeks.

APPENDIX G
AIR FORCE INVENTORY MANAGEMENT SPECIALIST/SUPERVISOR

SPECIALTY: 645X0 (Air Force Specialty Code (AFSC)).

TITLE: Inventory Management Specialist/Supervisor.

PHYSICAL WORK CAPACITY: Standard Light Duty (able to lift 40 pounds).

QUALIFICATIONS FOR AWARD OF AFSC (INITIAL CLASSIFICATION)

3 and 5 Skill Levels

The following general qualifications relate to the award of this AFSC:

- A score of at least 50 in the Administrative Aptitude area or of at least 45 in the General Aptitude area of the Armed Services Vocational Aptitude Battery (ASVAB) (mandatory);
- Knowledge (mandatory) of:
 - Basic mathematics,
 - Air Force property accounting,
 - Base supply policies and procedures,
 - Stock and inventory control,
 - Accountability and responsibility, and
 - Principles of property accounting and their applications for both manual and automated systems;
- Completion of high school with a course in mathematics (desirable);
- Experience in preparing and processing inventory management documents for both manual and automated systems (mandatory);
- Experience in munitions supply management is mandatory for the award of Suffix A (see following section);
- Completion of a basic inventory management course (desirable);

- Completion of a basic inventory management course and a basic munitions inventory management course (both desirable) for award of Suffix A (see following section);
- Qualification as an Inventory Management Specialist (mandatory) for entry into training for the award of Suffix A (see following section); and
- A physical profile showing moderately good health (mandatory).

7 Skill Level

The following general qualifications relate to the award of this AFSC:

- Qualification as an Inventory Management Specialist (mandatory);
- Experience in supervising stock consumption reporting and management (mandatory);
- Experience in munitions supply management procedures (mandatory) for the award of Suffix A (see following section);
- Completion of prescribed seven-level management course¹ (mandatory; and
- Completion of munitions supply management course (desirable) for the award of Suffix A (see following section).

Additional Specialty Information

AFSC Suffixes. Suffixes (also called shredouts) provide the principal means of identifying specific equipment or functions with any given Air Force specialty. This specialty, designated by AFSC, is authorized one suffix: Suffix A -- munitions.

Other Information. In addition to the AFSC and AFSC suffixes, the Air Force uses a number of numerical and alphabetical designators to show supplementary or complementary skills, experience, training, or other similar information helpful in the designation of qualifications appropriate to military positions, to airmen themselves, or to both. Some of these designators

¹This course, taught under Major Command auspices, provides skills appropriate for noncommissioned officers irrespective of AFSC. No technical logistics training is contained in the course.

are used as AFSC prefixes, while some are used separately from, but in conjunction with, the AFSC under consideration. Due to the large quantity of these designators, and due to the fact that they are intended to augment and complement, rather than to modify, the normal AFSCs, they are not considered further in this appendix.

THE JOB

General

The Air Force Inventory Management Specialist/Supervisor performs most of the tasks (except for warehousing functions) associated with the Air Force Standard Base Supply System (SBSS). This airman's duties include publications research, property accounting, customer support, stock control, and equipment management. At the 7 skill level, the Inventory Management Supervisor supervises, evaluates, plans, advises, and trains others in SBSS activities.

As an apprentice and journeyman,² this airman's work is concentrated on the basic functions of SBSS. Requisition actions are taken; and "due-in/due-out" and status files are maintained. The 64530 performs both manual and mechanized accounting functions, providing support especially for Air Force maintenance work.

The journeyman inventory management specialist conducts on-the-job training of apprentices, in addition to performing supply accounting and similar work personally.

²The Air Force (in Air Force Regulation 35-1) identifies apprentices (3 skill level) as airmen who have basic knowledge within an AFSC but who lack the experience and proficiency to perform most job tasks without supervision. Journeyman (5 skill level), on the other hand, have shown proficiency in their AFSC; they can reasonably be expected to perform on the job without direct supervision.

The master³ would be a foreman in the civilian industrial setting. Planning and scheduling work, establishing and conducting on-the-job training for apprentices and journeyman, evaluating and adjusting activities, and analyzing records and other data in order to improve system operation -- all are tasks the inventory management supervisor accomplishes routinely.

Areas of Assignment

As might be anticipated, the 645X0 positions of the Active and Reserve Components are distributed widely among the major functions and organizations of the Air Force. Examination of the functional concentrations of 645X0 airmen, however, shows interesting differences. Active Air Force 645X0 positions are concentrated in standard supply units: 52 percent of all inventory management billets. Air Force Reservist 645X0s, on the other hand, are found in appreciable numbers in mobility support units (36 percent), consolidated maintenance units (15 percent), and civil engineering units (13 percent). The majority (66 percent) of Air National Guard⁴ Inventory Management Specialist/Supervisor positions are assigned to the resource management function, an emphasis which contrasts sharply with the position distribution found in the Air Force Reserve and the Active Air Force. Table G-1 contains this and other information on 645X0 position distribution.

³"Master" in this working note refers to Air Force specialists who have attained the 7 skill level. They are airmen who have "gained a high degree of technical knowledge in their AFSC and . . . have acquired supervisory capability through training and experience." (See paragraphs 1 through 3d, Air Force Regulation 35-1.)

⁴In this appendix, several terms are used interchangeably to refer to the Air National Guard and the Air Force Reserve. The Air National Guard may be called the Air Guard or ANG. The acronym is used in tables and figures. Similarly, the Air Force Reserve is referred to as AFRES in tables and figures. Together, these two elements comprise the Air Reserve Forces, or ARF, the Guard/Reserve, or the Reserve Component.

TABLE G-1. DISTRIBUTION OF 645X0 POSITIONS AMONG MAJOR AIR FORCE FUNCTIONS

KINDS OF UNITS	DISTRIBUTION ¹			
	Active Spaces	ANG Spaces	AFRES Spaces	RC ² Dependence (Percent)
Air Force installation staffs (AF Kind Code ABS)	502	None	None	0
Aerial port operations (AF Kind Code APO)	12	1	51	81
Combat communications, providing tactical communications and air traffic control for theater combat air operations (AF Kind Code CCS)	72	229	None	76
Civil engineering, including custody of non-industrial real property, construction of new facilities and maintenance of old ones, fire protection, crash rescue, and janitorial/sanitation work (AF Kind Code CEG)	371	205	103	45
Consolidated maintenance, including both on- and off-aircraft maintenance (AF Kind Code CLM)	129	401	127	80
Communications, including air traffic control for established air bases and auxiliary air base communication (AF Kind Code CMN)	331	2	None	1
Military Airlift (AF Kind Code MAL)	244	None	86	26
Mobility support, providing services, materiel, or other types of assistance for military movements (AF Kind Code MOS)	80	None	293	79
Resource management, including procurement, comptroller, transportation, supply, and maintenance activities (AF Kind Code RMS)	None	2,479	None	100
Supply, providing for receipt, storage, and issue of most types of supplies (AF Kind Code SUP)	8,287	None	None	0
Tactical control, providing support for the use of air space by tactical air forces (AF Kind Code TCT)	98	142	None	59
Tactical fighter units and missions (AF Kind Code TFG)	666	None	10	1
Other missions and functions	5,136	291	157	8
Totals	15,928	3,750	826	22

¹Distribution is shown according to Air Force Kind Code. The Kind Code is a broad representation of unit groupings according to the "title" or "kind" of unit involved. To the extent that the unit title describes the unit mission or function, the Kind Code represents that mission or function also.

²Reserve Component.

Note: The term "spaces" denotes positions.

Peacetime versus Wartime

The worldwide standardization of the SBSS among the Air Force's MAJCOMs implies that the peacetime work of the Inventory Management Specialist/Supervisor (whether performed in the Active Component or in the Reserve Component) resembles very closely the work this technician should expect under wartime conditions. As with any technical skill, however, normal work assignments bring about a concentration by the specialist on one portion of the full range of duties and tasks encompassed by the specialty. Thus, 645X0 airmen of the Air National Guard now performing duties associated with the fiscal, comptroller, and funding concerns of resource management staffs may be faced with readjustment requirements within the specialty upon the onset of war.

Implications of Force Modernization

The delivery of one new system having impact upon the 645X0 is underway at the present time. The Combat Supply System (CSS) is a system designed for use at austere locations under combat conditions. CSS is a self-contained, supply-transaction and data-processing system which disassembles easily into several combat container loads. CSS data terminal displays and transactions are identical with those of SBSS, with which it is designed to link directly. CSS is designed with multiple data link capabilities for use under terms dictated by the capabilities of the austere location. Approximately 100 CSS site packages (70 to the Active Component; 30 to the Reserve Component) are to be delivered to the Air Force within the next year, approximately.

While operation of the CSS terminals and other components will be almost identical to the operation of SBSS, the maintenance and installation of the site packages present a new peacetime set of problems to Reserve Component

supply personnel (including 645X0s), particularly at those Reserve Component unit locations where the CSS, in its containers, becomes part of the units' War Readiness Spares Kit (WRSK).

Career Progression/Merging

Normal career and skill progression for the 645X0 Inventory Management Specialist/Supervisor is made up of the sequential steps listed in Table G-2.

TABLE G-2. CAREER AND SKILL PROGRESSION FOR THE 645X0

EVENT	SKILL LEVEL/ AFSC	ENLISTED GRADE	TITLE
Technical Training Graduation and Classification	3 (apprentice)/ 64530	E3 (Airman First Class)	Specialist
Upgrade Reclassifi- cation	5 (journeyman)/ 64550	E4 (Senior Airman) E4 (Sergeant) E5 (Staff Sergeant)	Specialist Specialist Specialist
Upgrade Reclassifi- cation	7 (master)/ 64570	E6 (Technical Sergeant) E7 (Master Sergeant)	Supervisor Supervisor

No merging or combination of career ladders occurs at the 3, 5, or 7 skill levels within this specialty. Such a merging does take place at the next grade (E8, Senior Master Sergeant), 64599, "Supply Management Superintendent." Further consideration of this manager/supervisor level of development is beyond the scope of this study.

THE INCUMBENT POPULATION

Personal Attributes

Age. At every enlisted grade level, Reserve Component Inventory Management Specialists and Supervisors are older than their Active Air Force

counterparts. Air National Guard 645X0s are slightly older than Air Force Reserve 645X0s. Table G-3 contains data on average age of 645X0 incumbents.

TABLE G-3. 645X0 INCUMBENT PERSONAL ATTRIBUTES -- AVERAGE AGE

GRADE	COMPONENT	MEAN AGE (YEARS)
E1-E3	Active	21.6
	ANG	24.3
	AFRES	24.1
E4	Active	24.7
	ANG	29.1
	AFRES	28.7
E5	Active	29.3
	ANG	33.5
	AFRES	32.7
E6	Active	34.7
	ANG	38.6
	AFRES	38.2
E7	Active	38.3
	ANG	45.1
	AFRES	43.4

Aptitude Area Scores. Active Air Force 645X0s score consistently higher than their Reserve Component counterparts in the Administrative Aptitude area of the ASVAB. Air National Guard and Air Force Reserve scores are comparable. The data displayed in Table G-4 are raw test scores. This fact, coupled with the evolutionary changes to the ASVAB test forms and the use of different qualifying thresholds at different times, dictates caution in interpreting this information. Only cohorts within each grade should be compared.

Civilian Education Completed. Over 98 percent of all 645X0 Inventory Management Specialists and Supervisors have completed high school. Five to six percent of the Air Reserve Force 645X0s have attained their

TABLE G-4. 645X0 INCUMBENT PERSONAL ATTRIBUTES --
AVERAGE ASVAB SUBSCORES

(Administrative Aptitude)

GRADE	COMPONENT	MEAN SCORE
E1-E3	Active	68.8
	ANG	66.4
	AFRES	62.3
E4	Active	75.0
	ANG	71.3
	AFRES	72.3
E5	Active	77.1
	ANG	70.9
	AFRES	71.6
E6	Active	77.5
	ANG	73.7
	AFRES	70.4
E7	Active	DUR ¹
	ANG	73.8
	AFRES	75.1
Totals		75.1
		71.9
		71.2

¹Data under review.

NOTE: The minimum acceptable score for training in this specialty is 50. A score of at least 45 in General Aptitude may be used as a substitute qualifying score.

graduation by means of the General Education Development equivalency certificate. Air National Guardsmen and Air Force Reservists assigned to this specialty are more apt to pursue college or university work. Table G-5 contains information on civilian education completed.

TABLE G-5. 645X0 INCUMBENT PERSONAL ATTRIBUTES --
CIVILIAN EDUCATION COMPLETED

(Percentage of Total)

GRADE	COMPONENT	NON-GRADUATE ¹	GED ²	HSDG ³	SOME COLLEGE ⁴
E1-E3	Active	0.2	0	93.4	6.4
	ANG	6.9	9.5	76.7	6.9
	AFRES	0	8.5	91.5	0
	Active	0.8	0	92.5	6.7
E4	ANG	0.6	7.8	80.9	10.7
	AFRES	1.2	7.0	81.2	10.6
	Active	0.6	0	90.5	8.9
E5	ANG	1.0	6.6	77.1	15.3
	AFRES	1.1	5.8	78.7	14.4
	Active	0.4	0	86.2	13.4
E6	ANG	1.3	4.9	73.9	19.9
	AFRES	1.9	3.4	76.0	18.7
	Active	0.9	0	81.5	17.6
E7	ANG	5.1	4.4	75.1	15.4
	AFRES	6.6	5.5	71.4	16.5
Totals		0.5	0	90.7	8.8
		ANG	2.1	6.2	15.4
		AFRES	1.8	5.3	14.8

¹Incumbents who have not graduated from high school.

²Incumbents who have completed high school through General Education Development (GED) equivalency.

³Incumbents who are high-school-diploma graduates (HSDG) but have no college work.

⁴Incumbents who have completed at least some college or university work.

Experience

Prior Military Service.⁵ One-half (50.3 percent) of all Air Force Reserve 645X0s bring some type of prior active military experience to their

⁵The prior service data presented in this section have been developed by the Defense Manpower Data Center using the Reserve Component Common Personnel Data System and a cumulative loss file containing all military service separation data since 1971. As publication of this report began, the National Guard Bureau's Air National Guard Support Center and Headquarters, Air Force Reserve were able to compute prior service information on Guardsmen and Reservists based on their own separate data files. That information shows higher levels of prior active service experience among both Air Guardsmen and Air Force Reservists than are discussed in this section. See Appendix I for more information.

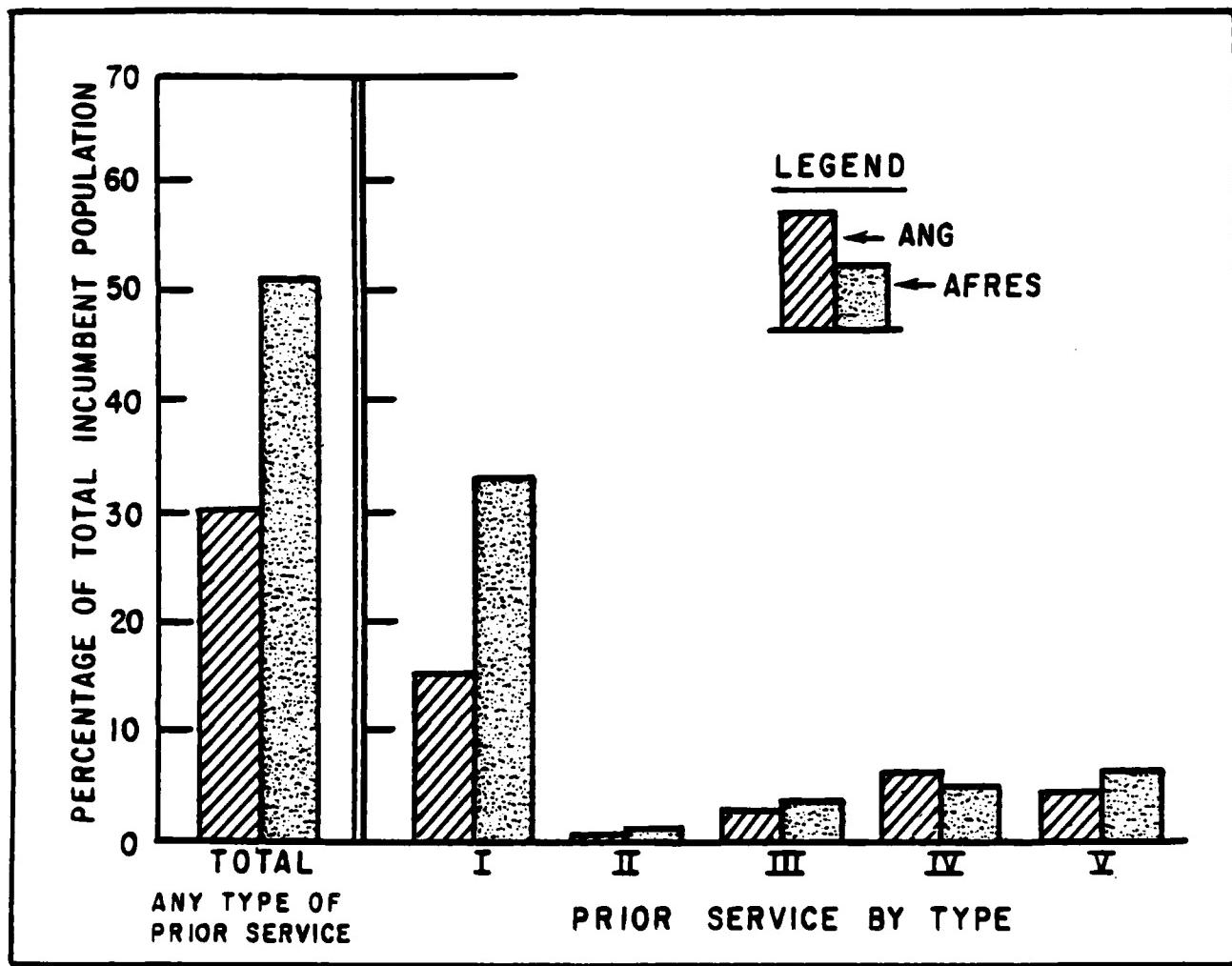
present Air Force Reserve positions. Among Air Force Reservists, 37.9 percent have had related prior military service (see Figure G-1). One-third (33.4 percent) of 645X0 specialists in the Air Force Reserve have extended active duty experience in the very same specialty. These figures for the Air National Guard are 30.6 percent, 19.1 percent, and 15.3 percent, respectively. Figure G-1 shows this, and related, information graphically.

Length of Service. Comparison of these specialists' length of total service on a grade-by-grade basis reveals very similar populations of 645X0s across components. Table G-6 displays the data.

TABLE G-6. 645X0 INCUMBENT EXPERIENCE --
LENGTH OF TOTAL MILITARY SERVICE

GRADE	COMPONENT	MEAN LENGTH OF SERVICE (YEARS)
E1-E3	Active	2.2
	ANG	1.6
	AFRES	1.4
E4	Active	4.8
	ANG	5.6
	AFRES	5.2
E5	Active	9.5
	ANG	9.7
	AFRES	8.6
E6	Active	15.0
	ANG	15.2
	AFRES	14.1
E7	Active	18.8
	ANG	23.7
	AFRES	20.1

FIGURE G-1. 645XO INCUMBENT EXPERIENCE -- PRIOR ACTIVE MILITARY SERVICE



NOTE: EXPLANATION OF TYPES OF PRIOR SERVICE:

I PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
SAME SPECIALTY.

II PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE,
NOT IN THE SAME SPECIALTY BUT IN THE SAME CAREER FIELD.

III PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE AND
IN SAME CAREER FIELD.

I - II & III RELATED SERVICE (37.9% AFRES) (19.1% ANG)

IV PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN THE SAME SERVICE BUT
NOT IN THE SAME CAREER FIELD.

V PERCENTAGE OF INCUMBENTS HAVING PRIOR SERVICE IN ANOTHER SERVICE BUT
NOT IN SAME CAREER FIELD.

IV & V UNRELATED SERVICE (12.4% AFRES) (11.5% ANG)

Time in Grade. In the lower five enlisted grades, the Air Force Reserve 645X0 is promoted more rapidly than either his/her Air National Guard or Active Air Force counterpart. Throughout all enlisted grades, the Air National Guardsman serves the same or slightly longer periods of time in each grade. This information, displayed on a grade-by-grade basis, can be found in Table G-7.

TABLE G-7. 645X0 INCUMBENT EXPERIENCE -- TIME IN GRADE

GRADE	COMPONENT	TIME IN GRADE (YEARS)
E1-E3	Active	0.7
	ANG	0.7
	AFRES	0.5
E4	Active	1.6
	ANG	1.8
	AFRES	1.4
E5	Active	3.1
	ANG	3.2
	AFRES	2.2
E6	Active	2.4
	ANG	4.6
	AFRES	3.9
E7	Active	1.9
	ANG	5.4
	AFRES	3.9

Civilian Occupation. A review of current civilian occupations reported by 645X0 incumbents in the Reserve Component shows that 33.3 percent of all Air National Guard personnel assigned to this specialty hold civilian jobs with direct technical application to the military job. The figure for members of the Air Force Reserve is 29.8 percent.

Full-Time Support. Over one-third (34 percent) of all Inventory Management Specialist and Supervisor positions in the Air Reserve Forces are filled by full-time civilian technicians or by full-time, military members of

the Active Guard/Reserve. The percentage of positions thus filled rises with an increase in enlisted grade.

The degree of compatibility between the specific, full-time job of the Air Reserve Technician and his/her military AFSC assignment in the Air Force Reserve unit is very high, since each civilian work position is designed with the military AFSC and unit vacancy as the starting point. In the Air National Guard the compatibility of civilian job and military assignment is somewhat less specific for full-time technicians, but civilian work assignments for these technicians do fall generally within the same career field as the AFSC of their military billet. Table G-8 contains information on full-time support staff.

TABLE G-8. 645X0 FULL-TIME SUPPORT FOR AIR RESERVE FORCES

GRADE	TOTAL AUTHORIZED POSITIONS	FULL-TIME SUPPORT ¹	
		Assigned	Percentage of Authorized Strength
E3	102	32	31
E4	1,457	133	9
E5	1,296	442	34
E6	1,043	545	52
E7	678	409	60
Totals	4,576	1,561	34

¹Does not include Active Component advisers or civilian clerical employees of the Department of the Air Force.

THE TRAINING PROGRAM

Each airman destined to be an Inventory Management Specialist/Supervisor, whether a member of the Active or Reserve Component, attends a Basic Military Training course of 6 weeks at Lackland Air Force Base, Texas, followed by a

5-week, 3-day technical training course at Lowry Air Force Base, Colorado. This course leads to classification as a 64530. The airman (by now an E3 or Airman First Class) then moves to the unit of initial assignment. There, this specialist begins a formal, technical, on-the-job training program providing upgrade training. This training program will continue throughout the airman's remaining career through the 7 skill level (master) and the E7 or Master Sergeant enlisted grade. No further formal, institutional training is required in this Air Force specialty, whether the incumbent is a member of the active or reserve forces.

Qualification as a 64530A occurs as follows. The 64530 airman is assigned (based upon local unit need) to work in a munitions inventory management position on a trainee basis. Since Air Force munitions are managed generally (but separately) within the SBSS, the 64530 brings appropriate entry-level skills to the munitions job. Through a structured, separate, on-the-job training program virtually identical to the program followed by the 64530, the 64530A trainee becomes job-qualified at the 3 skill level for munitions work. Formal classification is recommended by the supervisor and commander based on successful on-the-job training and experience. Award of the Suffix A by the Air Force Personnel Center (or by similar centers serving the Air Force Reserve and the Air National Guard) follows.

The Air Force on-the-job training program provides for supervised specialty development in knowledge ("knowledge training") and in task accomplishment ("qualification training"). For each Air Force specialty, a lengthy Specialty Training Standard (STS) is used throughout on-the-job training.⁶ The STS is a document listing requirements for subject knowledge, task

⁶A separate STS exists for 645X0 and for 645X0A.

knowledge, and task performance. It becomes a part of the airman's file within the unit of assignment. In advancing from the 3 to 5 skill level in the 304X4 specialty, each airman must:

- Complete satisfactorily a Career Development Course designed for this specialty by the Extension Course Institute of the Air University, Maxwell Air Force Base, Alabama. This course includes a career knowledge examination for which a passing grade must be achieved.
- Demonstrate satisfactory experience (to the supervisor's and commander's satisfaction) in inventory management in a unit setting.
- Be certified (by the supervisor and commander) as competent to accomplish 5 skill level tasks listed in the appropriate STS.

On-the-job training and on-the-job experience have been the sole vehicle used to acquire and sustain this specialist's and supervisor's skills once institutional apprentice training is successfully completed. While several journeyman- and master-level training courses (including a separate course for 64570As) are available to the 645X0 under the auspices of the Air Training Command, none of these courses is an AFSC-awarding course. They provide supplementary training to assist the inventory manager to refocus on the entire Air Force supply system. Members of the Air Reserve Forces attend these courses as they relate to Air Reserve Forces equipment or missions.

APPENDIX H
AIR FORCE FIELD TRAINING DETACHMENTS

GENERAL

Since 1946, the Field Training Detachments (FTDs) of the Air Force have provided maintenance training required by the recurring upgrades, conversions, and similar events which accompany the continuing modernization of the Air Force. In the other appendices of this report, we have referred to FTDs in the context of raising the experience level of the logistics specialist of the Air National Guard and Air Force Reserve. This appendix discusses the FTDs in greater detail.

MISSION

The basic and original mission of the FTD is to provide technical skill training on new or improved weapon systems and on associated support equipment. An additional mission which has evolved in recent years involves providing scheduled courses and informal technical advice to assist the Air Force in operating its formal, on-the-job training (OJT) program. Most FTD training courses are requested by units throughout the Air Force, although more than a dozen Air Force Specialty Code (AFSC)-producing courses offered by FTDs were recently directed by Headquarters, U.S. Air Force, through the Air Training Command. Despite this latter development, normal FTD training efforts are responses to specific needs expressed by units.

ORGANIZATION AND LOCATION

There are 75 FTDs and 1 Field Training Flight (FTF) operating in 96 separate locations worldwide. Sixty-one FTDs and the one FTF operate at seventy-seven locations in the Continental United States. The rest are

assigned abroad. The one FTF is an organization of the Minnesota National Guard located at Minneapolis-St. Paul, Minnesota.

FTDs are operated under the command of the Air Training Command and administered by the 3785th Field Training Wing at Sheppard Air Force Base, Texas, which in turn is divided into four Field Training Squadrons. Colocated with sizeable Air Force units, FTD location and approximate size have stabilized somewhat with time, although relocation and change in size would undoubtedly accompany any major restationing of Air Force units or the purchase of large quantities of new hardware. Figure H-1 shows the location of all FTD headquarters.

FIGURE H-1. LOCATION OF FIELD TRAINING DETACHMENTS



PERSONNEL

Present FTD-authorized personnel positions total just over 2,000 billets. The officer-enlisted-civilian ratio is approximately 1:4:1, giving the airman the major instructional load in each detachment. The average FTD totals 24 people, although their size varies significantly from the average. The aggregate strength assigned to FTDs has grown slowly but steadily over the past decade.

The number of positions and specialties assigned to each FTD is the negotiated result of discussions between the Major Command, which foresees a need for training, and the Air Training Command, whose responsibilities include the assignment of FTD instructors to meet the need. If the projected instruction cannot be provided by the people already assigned within the 3785th Field Training Wing, the command which will receive the training may be asked to provide additional personnel spaces to the FTD structure to help accomplish the training mission. Since these negotiations ideally begin in earnest some 3 to 4 years before the onset of the training required, there is often adequate time for personnel position adjustment in the Air Force's Program Objective Memorandum cycle to provide fiscal support for the negotiated structural changes.

CURRICULUM

At any given time, the FTDs offer a wide array of training experiences for their students. During a review of worldwide FTD effort in September 1984, for example, FTD instruction totaled 920 "courses," from 2 to 820 hours in length. At that time, those detachments were providing familiarization training to 108 separate Air Force specialties. That instruction covered 44 aircraft systems, 11 missile systems, and 12 support systems.

For reporting purposes, the FTD training effort is divided into the following categories:

- Systems Courses. These are courses related to a specific weapon or support system. This training typically has a significant hands-on component. Class sizes vary widely.
- Associate Courses. These are courses involving principles, techniques, or processes which relate to more than one weapon or support system. The training is often more "academic" than systems courses. Class sizes vary widely.
- OJT Advisory Services Courses. These courses provide formal and informal consulting, plus five instructional courses in OJT management and operation. Class size averages 15.

FTD graduates in all courses for Fiscal Year 1983 totaled almost 129,000.

Table H-1 contains a more detailed accounting of those graduates, by Major Command.

TABLE H-1. FTD GRADUATES, BY COMMAND

(Fiscal Year 1983)

COMMAND	CATEGORIES			TOTAL
	Systems	Associate	OJT	
Air Force Reserve	1,884	351	1,849	4,084
Air Force Systems Command	2,039	676	1,045	3,760
Air National Guard	1,746	798	6,129	8,673
Air Training Command	6,572	3,109	2,867	12,548
Military Airlift Command	8,051	3,429	3,615	15,095
Pacific Air Forces	2,250	1,256	994	4,500
Strategic Air Command	14,039	3,587	6,622	24,248
Tactical Air Command	17,489	9,346	6,088	32,923
U.S. Air Forces, Europe	5,566	2,433	2,429	10,428
Other	3,860	3,329	5,092	12,281
Totals	63,496	28,314	36,730	128,540

SUPPORT OF AIR RESERVE FORCES

As can be seen from the data in Table H-1, the annual number of Air Reserve Force graduates from FTD training in all three categories does not

rival those of most of the Air Force Major Commands. While the primary training focus of the FTDs rests clearly upon the Active Air Force, training requests from the Air National Guard and Air Force Reserve are met as they are received. For FTD training requiring a substantial time commitment, Air Reserve Force units typically send full-time technicians or Active Guard/Reserve personnel who are available, thus providing for a nucleus of trained people in the unit.

APPENDIX I
AIR RESERVE FORCES' DATA ON PRIOR MILITARY SERVICE

The Air National Guard and the Air Force Reserve have provided separate computations on prior active military service for Guardsmen and Reservists in the Air Force specialties selected for study. This information shows higher levels of prior active service experience than the information provided by the Defense Manpower Data Center (DMDC) using the Reserve Component Common Personnel Data System and active duty loss files. The DMDC data are cited in the main body and in Appendices A through G of this report. An analysis of the data bases is underway to determine how this discrepancy can be reconciled. The Air-Reserve-Forces-generated information is shown in Tables I-1 and I-2, alongside the DMDC information for comparison purposes.

TABLE I-1. AIR NATIONAL GUARD ACTIVE MILITARY SERVICE:
A COMPARISON

(Percentage of Total Population)

AFSC	PRIOR ACTIVE MILITARY SERVICE	
	DMDC as Source	ANG as Source
304X4	34.6	52.7
321X2	29.8	45.0
326X0	25.2	37.8
328X4	33.1	50.2
426X2	33.7	55.1
427X0	26.0	45.9
645X0	30.6	48.6
Totals	33.0	50.1

NOTE: ANG = Air National Guard.

TABLE I-2. AIR FORCE RESERVE PRIOR ACTIVE MILITARY SERVICE:
A COMPARISON
(Percentage of Total Population)

AFSC	PRIOR ACTIVE MILITARY SERVICE	
	DMDC as Source	AFRES as Source
304X4	67.4	86.9
321X2	53.3	58.6
326X0	83.3	67.9
328X4	44.5	65.9
426X2	43.2	62.9
427X0	47.9	75.3
645X0	50.3	73.7
Totals	48.0	67.1

NOTE: AFRES = Air Force Reserve.

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<p>This working note describes the current Air Force approach to building and sustaining technical logistics skills in both the Air National Guard and the Air Force Reserve. In the past decade, the Air Force has grown more dependent on the logistics specialists of the Air Guard and Air Force Reserve. Airmen assigned to the Air Reserve Forces now comprise a significant portion of the personnel in many Air Force specialties, and constitute a majority in a few instances. The purpose of this work is to assess the suitability and adequacy of the policies and programs which support technical skill training for the Reserve Component.</p>			
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